VOL. LXXIX PART THREE

JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

MARCH 1954

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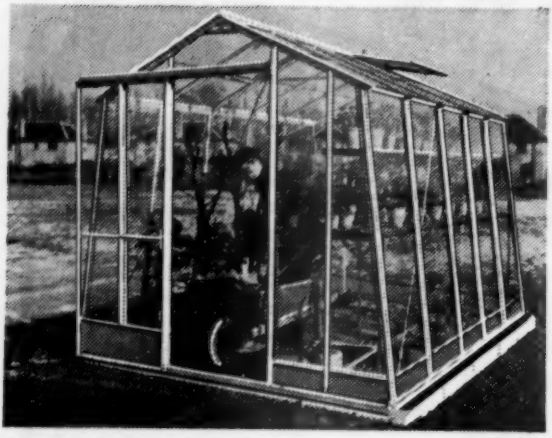

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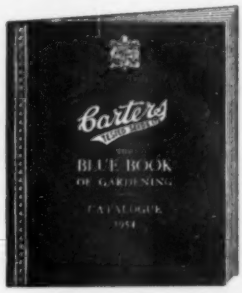

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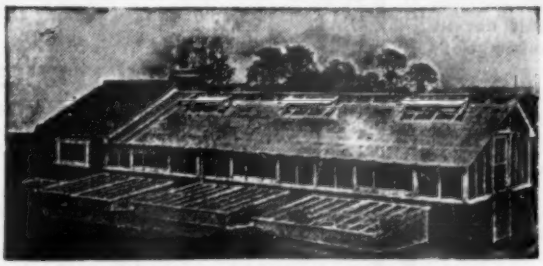

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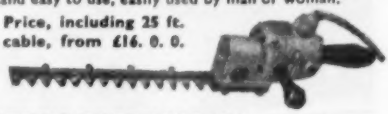

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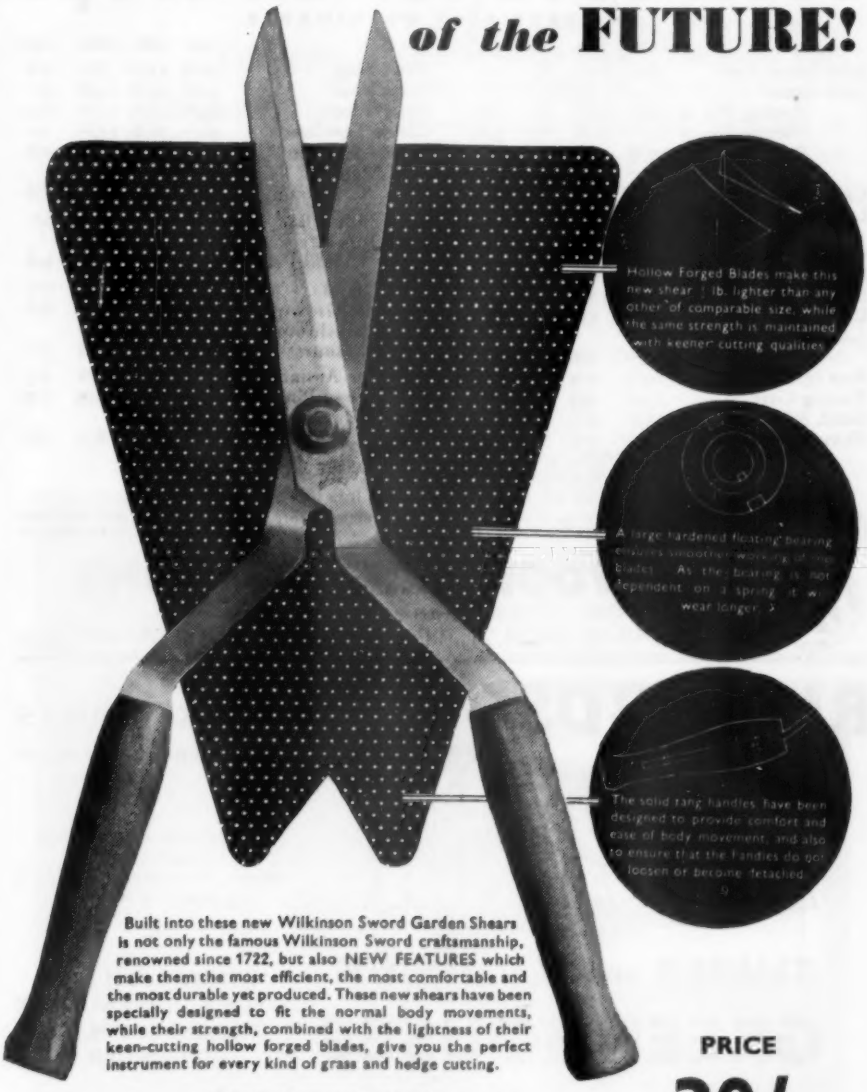
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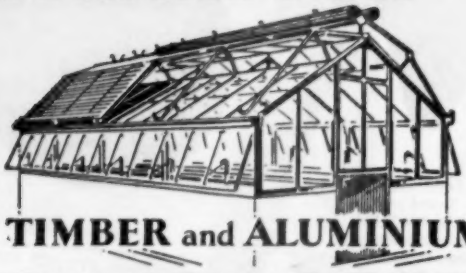

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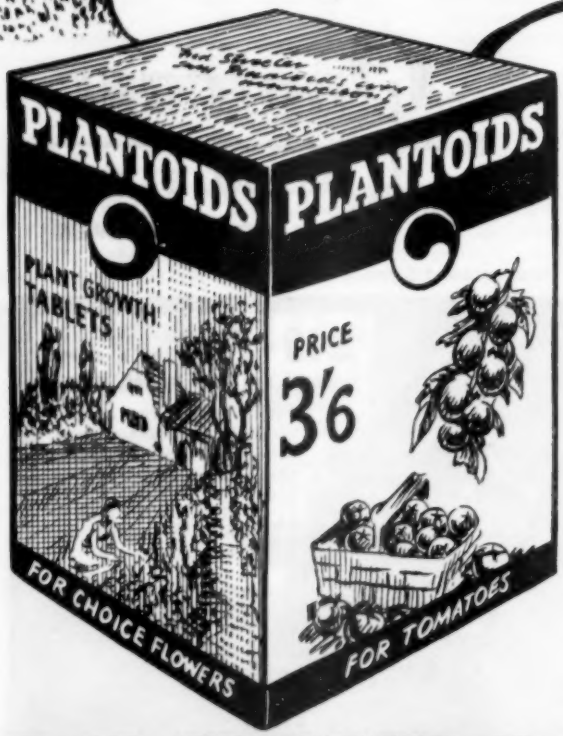

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JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

VOL. LXXIX PART THREE

March 1954

THE SECRETARY'S PAGE

ANNOUNCEMENTS—MARCH AND APRIL

Shows

TUESDAY, March 2 12 NOON to 6 P.M. WEDNESDAY, March 3 10 A.M. to 5 P.M.	Fortnightly Show.
TUESDAY, March 16 12 NOON to 6 P.M. WEDNESDAY, March 17 10 A.M. to 5 P.M.	Fortnightly Show. British Orchid Growers' Association's Show.
TUESDAY, March 30 12 NOON to 6 P.M. WEDNESDAY, March 31 10 A.M. to 5 P.M.	Fortnightly Show. Daffodil Competition.
TUESDAY, April 13 12.30 P.M. to 6 P.M. WEDNESDAY, April 14 10 A.M. to 5 P.M.	Fortnightly Show. Daffodil Show. Camellia Competition. Sewell Medal Alpine-house and Rock-garden Plant Competition for Horticultural Traders.
TUESDAY, April 27 12 NOON to 6 P.M. WEDNESDAY, April 28 10 A.M. to 5 P.M.	Fortnightly Show. Alpine Garden Society's Show. National Auricula and Primula Society's Competition (April 27 only).

Lectures

TUESDAY, March 2, at 3 P.M. "Recent Developments in the Use of Insecticides on Horticultural Crops" by MR. J. H. STAPLEY, B.SC., A.R.C.S.

TUESDAY, March 16, at 3 P.M. "Annual and Biennial Flowers" by MR. A. P. BALFOUR, F.L.S., V.M.H.

TUESDAY, March 30, at 3 P.M. "The Gardens of Dartington Hall" by MR. PERCY S. CANE.

TUESDAY, April 13, at 3 P.M. "Some Uncommon Plants for the Chalk Garden" by MR. L. MAURICE MASON.

TUESDAY, April 27, at 3 P.M. "The Construction and Planting of Dry Walls" by MR. W. E. TH. INGWERSEN, V.M.H.

Demonstrations at Wisley—The following demonstrations will be given at Wisley, that on the second day being in each case a repetition of that given on the first.

Flower Garden—March 3–4. The Pruning of Roses. (Commencing at 2 P.M.) March 10–11. Seed Sowing and Vegetative Propagation of Alpines. (Commencing at 2 P.M.) *Fruit Garden*—March 17–18. Pests and Diseases of Fruit Trees; Recognition and Methods of Control. (Commencing at 2 P.M.)

The Society's Sesquicentenary—This year the Society celebrates the 150th anniversary of its foundation in 1804, and to mark the occasion arrangements are in hand for enabling Fellows to see many of the documents, rare books and other items of historical interest which have been gathered together during the lifetime of the Society. This exhibit will form one of the main attractions of a reception which it is proposed to hold on the evening of July 27 in the Old Hall. It will be open to inspection by Fellows and the public on July 28, which is the second day of a Fortnightly Show. Full details of the reception and other arrangements concerning the Sesquicentenary will be given in a later issue of the JOURNAL, together with information concerning the method of application for tickets.

The new Hostel and Restaurant at Wisley will be officially opened on Wednesday, July 28. The attention of Fellows, Associates and Secretaries of Affiliated Societies is drawn to the fact that the Gardens will be closed on this day (as stated on the tickets), but special arrangements for the admission of Fellows and Associates will be made and details will be announced in a later issue of the JOURNAL.

Refreshments at Wisley—Until the restaurant is in operation, refreshments will continue to be served on the lawn adjoining the Herbaceous Borders, where chairs and tables will be available. This will be a cafeteria service of cold lunches, sandwiches, cakes, tea, coffee, and other light refreshments. Visitors are requested to note the following detailed arrangements:

March 31 to October 31 (Excluding Good Friday and July 28)
Weekdays—From 10.30 A.M. to 6 P.M. (Cold lunches from 12 NOON to 2 P.M.)
Sundays—From 2 P.M. to 5.30 P.M. (4.30 P.M. in October).

It is regretted that it has not been possible to arrange for "set" teas to be served. The Society cannot accept responsibility for reserving tables. It may be possible for the caterer to reserve tables for lunches and teas at pre-arranged prices on days other than Saturdays or Sundays. Arrangements should be made direct with the caterer, Mrs. D. Badcock, 18A St. James' Road, Sutton, Surrey (Tel. VIGilant 4611).

Picnicking is not allowed in the Gardens, but there are a number of pleasant spots for a picnic in the immediate neighbourhood.

Visit to Mr. Edmund de Rothschild's Garden at Exbury, Southampton—Mr. de Rothschild has once again kindly invited Fellows of the Society to visit his garden at Exbury on Wednesday, May 19, 1954, to see the Azaleas and later Rhododendrons in flower. A coach will be available for the convenience of those who may wish to travel from London, and luncheon and tea will be provided at Exbury. Fellows wishing to visit Exbury on this occasion are requested to write to Mr. N. K. Gould, R.H.S. Gardens, Wisley, Ripley, Woking, Surrey, as soon as possible, and not later than March 21, asking for a leaflet giving full details of the arrangements.

American Camellia Society—Arrangements have now been made by the American Camellia Society for Mr. G. H. Pinckney to act as honorary agent for them in Great Britain in place of Mr. J. A. Slocock. The annual subscription is £1 16*s.* and this includes receipt of the Annual Year Book containing approximately 300 pages and illustrated both in colour and black and white and also four quarterly issues of their Bulletin giving records of the latest varieties and articles on cultivation. Subscriptions should be sent direct to Mr. G. H. Pinckney, at Messrs. John Waterer, Sons & Crisp Ltd., Twyford, Berks., and cheques made payable to G. H. Pinckney, A/C American Camellia Society and crossed Barclays Bank Ltd., Twyford, Berks.

Old Camellia Varieties—The *Index of Old Camellia Varieties*, compiled by Mr. A. I. Ellis, has now been reproduced by the multilith process in America through the kind offices of Mr. Ralph Peer. Copies of this book, which contains the original descriptions of many of the older Camellia varieties, are now available from The Secretary, price £2 2*s.* 0*d.*, postage and packing 1*s.* 6*d.*

NOTES FROM WISLEY

WITH the arrival of March our thoughts are turning towards the spring-flowering plants many of which, we hope, will be in full flower before the end of the month. There are numerous species and hybrids of *Primula* that are at their best in the spring months and perhaps the most widely known member of this genus is *P. vulgaris*,

the Common Primrose, one of the flowers which all of us, especially those of us in southern England, have known from our childhood when we found it along with the Bluebell on many a mossy bank and in lightly wooded areas. From naturally produced pinkish-flowered forms of our native Primrose, selection and hybridization have produced a great strain of coloured Primroses—the Spetchley Strain, and from crosses between coloured forms of *P. vulgaris* and *P. veris* (the Cowslip), has developed the popular Polyanthus which this year is being used for the spring bedding on the terrace at Wisley. In olden days the roots of both the Primrose and the Cowslip were used medicinally. According to Sowerby's *English Botany* the leaves of Cowslip may be used in salads while the wine from the flowers is reputed to resemble the sweet wines of the south of France.

The increasing popularity of the Primula no doubt in part is due to the tendency towards the development of the less formal garden, and the Asiatic Candelabra species which have attained a dominant position in European gardens, being very tolerant of our conditions, lend themselves excellently to informal grouping in association with shrubs and trees which break the full power of the sun. When preparing soils that tend to dry out rather quickly the addition of humus such as peat or leaf mould before planting is beneficial. Of the Candelabra types pride of place must be given to E. H. WILSON'S introduction from Western Szechwan, *P. pulverulenta*, and all its numerous forms and hybrid kin, which raise slender scapes up to 3 feet high carrying many superposed whorls of deep red, pink, rose or white flowers. Much the best known and the most beautiful of these forms is the pink-flowered, fertile Bartley Strain. WILSON, from the same area, also introduced *P. Cockburniana* which though lacking the robust constitution of *P. pulverulenta* and though being short-lived and often treated as a biennial is nevertheless well worth a place in the garden on account of its whorls of dark orange red corollas on stems 1 foot high. The closely related pale orange-flowered *P. chungensis* has a wider distribution being found in Yunnan, Burma and Assam as well as in Szechwan. It is more robust and larger in all its parts than is *P. Cockburniana* and has the outside of the corolla tube stained red. It has been crossed with *P. pulverulenta* to produce the handsome hybrid *P.* × *Chunglenta* which has flowers of a deep red colour that quickly fades with age. Also of reddish orange hue is *P. aurantiaca* from Yunnan; like *P. Cockburniana* it is not a very strong grower but in the moister position can be very attractive.

P. japonica was noted in Japan by FORTUNE in 1861, but it was some ten years later before it was in cultivation in this country for the original importation of both seeds and plants failed to grow. The type has deep purplish red flowers while there are variants of many colours. Two strains to be seen at Wisley are 'Miller's Crimson' and 'Postford White.' The latter, planted in a drift, is particularly attractive and has the virtue of coming perfectly true from seed. Though *P. japonica* is undoubtedly a perennial it should however be raised frequently from seed and grown in a moist shady spot in rich, rather heavy, loam.

Further members of the Candelabra section providing May flowers both in the Wild Garden and on Battleston Hill are *P. Bulleyana*, *P. Beesiana* and *P. burmanica*, all rather variable in flower colour. In the best forms the corollas of the former are deep orange while those of the other two are of rosy carmine and deep purple respectively. Finer than those are two yellow-flowered species which appreciate moister conditions, *P. helodoxa* and the closely allied *P. prolifera*. The Burmese *P. helodoxa* is undoubtedly the most elegant and beautiful of FORREST'S Candelabra Primula introductions, producing sturdy scapes that rise to a height of 4 feet. *P. prolifera*, which some believe to be an even better plant than *P. helodoxa* and native of Assam, was described as long ago as 1820 by WALLICH, but it was not introduced to British gardens until 1947. Both species are flourishing in the Wild Garden.

Of the early flowering easily grown Primulas the Himalayan *P. denticulata* with pale purple, yellow-eyed flowers can be seen in a fine drift at the top of the Award of Garden Merit as well as on Battleston Hill. At first sight it might appear that the soil on the Hill was rather dry for Primulas, but it is interesting to note that many of those plants in the borders flanking the road on the north side of the Hill are reproducing themselves naturally, a most unusual circumstance elsewhere in the Gardens.

In recent years the members of the Petiolares section have begun to rival in popularity the Candelabra species. The Himalayan *P. Edgeworthii*, of which there are many specimens in the Wild Garden (where it was flowering early in December last year) and the Rock Garden as well as in the Alpine House, resents the winter rains and thus outside is best covered with glass if its pale mauve white-eyed flowers are to be seen at their best, usually during the period January to March. This species, perhaps to some gardeners still better known as *P. Winteri*, is a most attractive rosette plant as those who saw it on the peat bank in the Wisley exhibit at Chelsea last year may remember. The allied *P. gracilipes* of Sikkim, Nepal and Tibet is likewise an attractive foliage plant and opens its pink, brownish-yellow-eyed flowers very early in the year. These vary considerably in size and in colour; the form of this species in the Wild Garden is a particularly good one.

Like most members of the Petiolares section *P. gracilipes* is rather obdurate in setting good seed. Fortunately, however, it is very easily propagated by leaf cuttings as is *P. scapigera* introduced from Sikkim by COL. LOWNDES in 1934. Another Petiolarid, *P. bhutanica* is one of the loveliest species in the whole genus, having handsome leaf rosettes and fine pale blue, yellow-eyed flowers. LUDLOW and SHERRIFF introduced this species from Bhutan in 1936, the year after it was first found by KINGDON WARD, not in Bhutan but in the Assam Himalaya. All these Petiolares Primulas are eminently suitable for cultivation in the peat wall or on shaded banks or borders. They require sharp drainage, partial shade from the strong sun and a cool, damp atmosphere. Though propagation from seed is not very easy, the majority can be increased by division.

Of the orange-eyed yellow-flowered *P. Forrestii* much has been written, for this evergreen species which appreciates a position in crevices between rocks where the overhead rains may be warded off is an interesting and fine plant at all times of the year. The rhizomatous woody growths gradually elongate till they are in nature, as FORREST saw them in Yunnan, 2 to 3 feet long. These growths terminate in a rosette of bright green rugose leaves which in May are enhanced by the arrival of the flowers. *P. Forrestii* is a member of the Bullatae section as is *P. redolens* which was introduced from Yunnan by KINGDON WARD. It has leaves similar to those of *P. Forrestii*, but the rhizomes are more tufted and upright. Forming a large flat-topped umbel the fragrant flowers are white or pale lilac-pink with a yellow eye, whilst the whole plant is covered with pale glandular hairs. In all but the most favoured of gardens, both plants only reveal their full beauty in the Alpine House.

The widely distributed Himalayan *P. involucrata* which has scented white flowers and the Chinese and Tibetan *P. yargongensis* with pale mauve to pink flowers belong to the section Farinosae. Both appreciate the moist position, in fact they love to have their toes in water; under such conditions they will grow freely and produce as many as a dozen scapes from a single crown. Few members of the Farinosae section are as amenable in culture as these, and though many species have been introduced into European gardens only a few have survived for any considerable time. Two exceptions are the Balkan rose-red flowered *P. frondosa* which has been in cultivation for over fifty years and is a most attractive plant for the moist well-drained site, and the Caucasian yellow-flowered *P. luteola* which was introduced into this country round about 1867 and has always held its place in gardens; flowering in June, it helps to lengthen the Primula season. *P. Clarkei*, endemic to Poosiana, in Kashmir, is an amazingly floriferous plant which requires to be divided frequently if it is to be grown successfully. A plant may be studded with so many rose-pink flowers that the heart-shaped leaves can scarcely be seen. It can be found usually in April in the Alpine House where it may be noted that during the winter considerably more shingle has been placed on the staging so that the pans there do not merely rest on, but can be plunged into, the shingle. The purpose of this is to prevent the pans drying out so quickly. Ideally, of course, the pans should be plunged to their rims in the shingle, but with the frequent changing of plants in this house it is not possible to do this. Of *P. Clarkei* there is only a small stock at Wisley, but of the Himalayan *P. rosea*, also of the Farinosae section and appreciating a moist, even muddy, position, there is a whole river bed running down the Alpine Meadow. The rosy pink flowers in April afford a wonderful contrast with the yellow trumpets of *Narcissus Bulbocodium*.

This is but an all too brief introduction to some of the many species of Primula to be found at Wisley. Those Fellows who visit the Gardens during the spring months may see many others as well as the trials of *P. malacoides* and of *P. sinensis* about which there is not space to say more.

AIR LAYERING EXPERIMENTS AT WISLEY

F. E. W. Hanger, V.M.H., and A. Ravenscroft

MOST trees and shrubs are comparatively easy to reproduce vegetatively from cuttings, yet there are notoriously obdurate plants such as Acers, Abeliophyllum, Magnolia, Mahonia, Prunus, Parrotia, etc., which are so difficult to root as to make the whole operation not only unprofitable but most impractical.

During the last two years, 1952 and 1953, experiments have been carried out in the Gardens at Wisley to test air layering as a means of overcoming this difficulty. The mysterious plastic film containers which have been hanging on trees and shrubs in various parts of the Gardens have been a source of great interest to Fellows. Queries have been so numerous that it has been decided to publish this article giving brief details of the information so far obtained from our experiments.

For the amateur who is interested in the propagation of plants and where the time factor is not of paramount importance, air layering has its appeal and can be made the means of producing many a duplicate of some rare and beautiful plant which may eventually be presented to some friend or made to adorn another part of the garden. During these days of high labour costs the time involved will make general air layering a non-commercial proposition, but it can play an important part in nurseries in the increase of trees and shrubs which are hard to propagate vegetatively and do not lend themselves easily to normal layering as a means of multiplication.

Air layering originated from the ancient Chinese practice of binding manure and moss to a twig to induce root formation in plants which were difficult to root from cuttings. The method of air layering has been in constant use through the years chiefly as a means of propagation of stove and greenhouse plants. It consisted of damaging or cutting a stem of a plant and wrapping moist moss and soil around the injured part, the compost sometimes being held in position with string or a flower pot cut in two, and placed around the material. Constant attention was necessary to keep the moss or soil continually moist, when rooting usually occurred. This watering of necessity had to be undertaken several times a day even when in a warm closed greenhouse. Such frequent attention would not be possible with out-of-doors air layering and it is here that the new plastic films have been the means of providing air-tight conditions and thus retaining the moisture within until the layer is sufficiently rooted.

POLYETHYLENE FILM

After the recent world war extensive experiments with the new plastic films to replace the adhesive bandage in air layering practices were carried out in various parts of the United States of America, especially at the Arnold Arboretum where excellent results were claimed with the new plastic film "Polyethylene." This material is widely used for packing foodstuffs and cannot be bettered for the transportation of

cuttings and small plants which need air-tight conditions. "Polyethylene" appears to be remarkably strong, very flexible and easily handled and when it is exposed to tropical conditions such as those in a stove house with its high temperatures and constant humidity no case of mould growth or attack has been recorded. "Polyethylene" is identical to the plastic film sold in this country under the names "Alkathene" (renamed "Visqueen") or "Polythene."

There are a confusing number of plastic films now on the market. As all do not have the same properties for successful air layering it is important to obtain the right material.

"Polyethylene" can be purchased in many thicknesses but those ranging from four thousandths of an inch to six thousandths of an inch inclusive are considered ideal for air layering. No significant difference in the suitability of these various thicknesses is evident. Film less than four thousandths of an inch is considered too thin as the material is apt to stretch when being wrapped around the moss; such thin plastic film also tends to admit water when subjected to constant overhead irrigation. Thicknesses of seven thousandths of an inch and more proved to be too heavy and less flexible making the perfect air-tight "end seal" difficult to accomplish. This plastic film has exceptional qualities for retaining water vapour and it has been observed that air layers with perfect "end seals" are kept moist for periods of up to one year in length. As "Polyethylene" film is fairly transparent the developing roots of the twig are clearly visible under the wrapping, and thus by careful observations the experimenter can ascertain when sufficient roots have been formed and when to sever the air layer from the parent plant.

"Polyethylene" film cut in pieces 9 inches by 7 inches is a good average size to hold sufficient rooting material for air layering trees and shrubs. Tubular plastic material is obtainable and this overcomes one of the difficulties of the process of air layering which is to exclude air at the overlap of the bandage enclosing the material round the stem thus leaving only the two ends to be secured by electrical insulation tape. Tubes 3 to 4 inches wide and 8 to 9 inches long make a good average size, but have the disadvantages of taking much longer to operate, and being more expensive to purchase. Flat sheet "Polyethylene" plastic film can easily be converted into tubular pieces and an efficient seal may be obtained by using a gas flame. The best method is to place the flat sheet between two metal plates, allowing the edges to be sealed to protrude by approximately $\frac{1}{8}$ inch. Direct the flame on the exposed edges until the Polyethylene "runs back" to the metal plates and cools off. This method will be found to be simple and quick in operation.

AIR LAYERING

It has been proved that air layering is best accomplished during the month of April on matured one-year-old wood. Little success has been obtained late in the season with the current year's growths. This is no doubt due to the fact that in the spring the plant is in active growth,

whereas in the autumn the rooting of difficult subjects by air layering has not been assisted by the fact that plants (especially deciduous varieties) are beginning to enter their period of winter rest. The soft mid-summer growths of trees and shrubs are difficult to manage. A large majority of the young growths flag and suffer considerably, many of them withering and almost dying at once when a cut is made in the stem 1½ to 2 inches long.

When dealing with the matured wood during the month of April the making of the air layer itself is very simple and effective. Select young twigs of reasonable thickness (about the size of a lead pencil) remembering that these must of necessity vary according to the type of tree or shrub chosen to be air layered. A longitudinal cut, 1½ to 2 inches long, is made in an upward direction in the chosen stem of the plant. The entrance of the cut should commence almost immediately beneath and to the side of a leaf axil, leaving the axil on the tongue of the cut and a reasonable distance from the apex of the shoot—approximately 6 to 12 inches; this to be governed by the thickness of the stem to be air layered, the thinner the shoot the shorter the air layer. Care must be taken when making the upward longitudinal cut to make the incision penetrate almost to the centre of the stem. When this work is carried out as advised during April, the propagator will be working on the previous year's growth, with the sap of the plant already rising and thus making the operation more or less simple. Experiments with the circular bark method, which necessitates the removal of a complete circle of bark around the stem, proved to be far less successful than the upward longitudinal cut. With the circular bark method casualties through breakages, caused by the wind, etc., were numerous.

After the necessary cut has been made a growth-promoting substance, preferably in powder form, is applied to both cut surfaces, and around the stem in the immediate vicinity of the cut. The next important step is to open the jaws of the cut by placing a small twist of clean Sphagnum moss between the cut surfaces. A large handful of good quality Sphagnum moss, free from all foreign matter is then well soaked in rain water, and wrapped around the stem. This is then held in position with the plastic film which must be wound around the covering moss in such a way as to arrange for the overlap of the film wrapping to be on the underside of the air layer, thus preventing rain water from seeping into the package. It only now remains to "air seal" the two ends with adhesive tape. Before applying this the plastic film must be twisted tight at each end. If the two ends are folded rather than twisted in the direction of the overlap this will prove a quick and easy procedure. When applying the tape care must be taken to continue the winding beyond the edge of the film to finish on the wood of the stem; this prevents water running down the stem of the plant into the moss. Should this be allowed to occur numerous failures among the air layers will occur due to the soggy conditions inside the plastic wrap creating unfavourable rooting conditions.

If the air layer is correctly created it will remain moist and healthy, over a period of months, giving ample time for rooting to take place.

One-third granulated peat or acid vermiculite can be incorporated with the Sphagnum moss inside the plastic film with advantage. Vermiculite adheres to the damp moss more readily than granulated peat and for this reason is preferable.

Should air layers be made on rather slender wood, it will be found necessary to secure them to an adjacent branch to prevent swaying and damage from wind.

ESTABLISHING THE ROOTED LAYER

After 8 to 12 weeks, roots may be expected to protrude through the moss, and their progress can be watched through the transparent plastic film. The thick flesh-like roots of Magnolias and other plants will be easily noticeable but the fibrous roots of Prunus, Roses, etc., are much more difficult to see. These will need close scrutiny to ascertain when the layer has formed sufficient roots to enable it to re-establish itself with safety after being cut from the parent plant.

As soon as it is considered that sufficient roots are formed to sustain the layer's independence it should be removed by cutting through the stem below the lower insulation tape-seal.

It has been stated elsewhere that air layers are difficult to re-establish independently in new compost. This has not been evident at Wisley, possibly due to the fact that every assistance is given to the layer (which is usually a large plant with a small root system) to encourage it quickly to become well rooted in suitable compost.

After the air layer has been cut free the insulation tape must be removed from each end and the plastic film carefully unrolled. It should then be easy to separate (the majority) of the moss from the roots, and it will now be necessary to remove with a pair of secateurs the stem snag below the rooted portion. The layer is now ready to be potted into 4-inch pots with plenty of drainage and one of the following composts:—

1. Equal parts of John Innes Potting No. 1 and Peat Moss.
2. Equal parts of J.I.P. No. 1 and Vermiculite.
3. Equal parts Vermiculite and Peat Moss.

The vermiculite should possess an acid reaction.

As soon as potted the young plants should be placed in a cold frame and receive frequent syringing on all suitable occasions. Special care not to over-water in these early stages is essential.

For the first week the cold frame containing the young layers must be heavily shaded and closed. Later the shading can be decreased gradually and the air to the frame increased. When the roots of the new plants are well established around the sides of the pots, potting on, or planting out-of-doors in the open nursery, is advised before a check to growth is possible.

PLANT GROWTH SUBSTANCES AS AN AID TO AIR LAYERING

The experiments carried out during the past two years have been made more comprehensive and interesting by the help given by the makers of certain plant growth-substances. Not only have they given their commercially available growth-promoting substances in both liquid and powder form (Seradix A and Seradix B), but when requested, special preparations of indolyl butyric acid, 2 : 4 : 5-Trichlorophenoxy-acetic acid and (2 : 4 : 5-Trichlorophenoxy) propionic acid.

It was soon made evident that the powder form lent itself more favourably to the application of air layering. During the first season's experiments therefore, powders containing indolyl butyric acid with strengths ranging from 1,000 p.p.m. to 8,000 p.p.m. were used.

The most concentrated of these is normally recommended for hard-wooded cuttings, and in the Wisley experiments with air layering, proved the most successful.

In most cases especially with Abeliophyllum, Mahonia, Magnolia, Parrotia and Prunus a 100 per cent. rooting took place within 10 to 12 weeks. Notable exceptions were Acers, H.T. Roses and large leafed Rhododendron species, all of which formed a large amount of callus, and after months of watching no roots were forthcoming.

The intermediate strength gave very satisfactory results on many plants, but not so high a percentage as the stronger powder. Again the weakest concentration was quite successful with less difficult rooting subjects, but with the more difficult varieties the percentage of successes was much less than with the intermediate strength.

At the end of the first season's experiments the results proved that the powder containing 8,000 p.p.m. I.B.A. gave by far the best results; yet this strength did not succeed in producing roots (only callus) on a number of plants. The success obtained by these initial efforts encouraged us to continue the experiment for another season, using much stronger growth substances than the I.B.A.

The makers also arranged to help by making up nine preparations containing the following concentrations :—

1. Indolyl-butyric acid @ 15,000 p.p.m.
2. „ „ „ „ 20,000 p.p.m.
3. „ „ „ „ 30,000 p.p.m.

4. (2 : 4 : 5-T) 2 : 4 : 5-Trichlorophenoxy acid @ 100 p.p.m.
5. „ „ „ „ „ 1,000 p.p.m.
6. „ „ „ „ „ 10,000 p.p.m.

7. (2 : 4 : 5-TP) α(2 : 4 : 5-Trichlorophenoxy) propionic acid @ 100 p.p.m.
8. (2 : 4 : 5-TP) α(2 : 4 : 5-Trichlorophenoxy) propionic acid @ 1,000 p.p.m.
9. (2 : 4 : 5-TP) α(2 : 4 : 5-Trichlorophenoxy) propionic acid @ 10,000 p.p.m.

By using this wide range of growth substances it was hoped to find a suitable strength to encourage the rooting of the more difficult plants which failed to root with the commercially available regulators. It was fully realized that the highest concentrations might be injurious to plant life but at any rate it was hoped to obtain the upper limits of the plants' endurance to growth substances. With the stronger strengths Magnolias particularly produced an abundance of very thick thong-like structures. Sections of these showed them to be typical roots with very wide thin-walled cortex and a central cylinder showing 11 to 12 strands of primary xylem alternating with small groups of phloem. There was no sign of root hair development and this may explain the reason why it has often been reported that cuttings rooted with the aid of growth-promoting substances fail to grow away satisfactorily. This may be due to the lack of root hairs on roots produced with the aid of too powerful growth regulators.

H.T. Roses which failed to root with I.B.A. 8,000 p.p.m. were rooted 83 per cent. with the stronger I.B.A. at 15,000 and 20,000 p.p.m.

The various species and varieties of Acer require different strengths of growth-regulating substances, *A. palmatum* and *A. palmatum atro-purpureum* need I.B.A. as strong as 30,000 p.p.m. with the help of which they root readily. I.B.A. at 20,000 p.p.m. will assist the majority of Acers to root quite successfully when air layered.

The stronger concentrations of (2 : 4 : 5-T) at 10,000 p.p.m. and those of (2 : 4 : 5-TP) at the same strength did much damage.

In the majority of cases the air layers (especially the Magnolias) completely died, and with many other genera they became dwarfed and distorted. Some layers produced roots although the growth above the roots was killed. Many of the roots were thick and fleshy and when inspected appeared to have no root hairs attached.

CONCLUSION

To date it has not been possible to investigate fully the reactions of the Rhododendron genus to growth-promoting substances when air layered, but enough has been accomplished to prove that if applied carefully and according to recommendations indolylbutyric acid still holds its own amongst accelerators of root growth when plants are air layered. However, much research work is still necessary before we can solve many of the limiting factors which must be taken into consideration before the full benefit is obtained from root inducing substances.

POTATO VARIETIES—OLD AND NEW

Mrs. N. McDermott

(*Lecture given on October* 6, 1953; DR. H. V. TAYLOR, C.B.E., V.M.H., *in the Chair*)

THE Potato is one of the important crops closely linked with the history of this country and was even acknowledged to be so 130 years ago when it was written that in some points of view it may justly be regarded as one of the blessings to mankind, but at the same time it is justly capable of operating the greatest calamities too. Ever since it has become an article of human food in Europe, it has been more or less in front of the British public for over 300 years. It did not, however, excite much interest until the beginning of the present century, when there was a tremendous boom—or to put it more plainly a "ramp"—in the Potato world, when not only usually cautious farmers and gardeners but speculators, almost lost their mental balance in the desire to gain wealth by gambling in the new Potato craze.

It is well to note that an advantage now being reaped as a result of past work, is that the chaos found to exist in the trade at that time concerning the naming of varieties is now well in hand. Potato synonyms —those found to be identical with existing kinds—have disappeared as compared with the situation in the trade in 1920 when 72 per cent. of the varieties offered were synonyms, and moreover they were offered at enhanced prices.

This was also not unusual 50 years ago, for it is recorded that a variety was charged £80 per ton under a new name for what under its original name could be bought for £5. There was the case of 'Eldorado,' when an inferior stock of this inferior variety was sold for £100 for a single tuber and the breeder was offered £200,000 for the complete stock; and there was further excitement over 'Northern Star,' then being sold at £25 per tuber. It is interesting to note that ' Eldorado' was later found to be another name given to the old variety 'Evergood.' DR. REDCLIFFE N. SALAMAN, who was Chairman of the Potato Synonym Committee for many years, has summed up this crazy practice in the following words:— "The excitement, the credulity, the folly and the fraud resembled the South Sea Bubble in miniature."

Thus was the state of things in the Potato industry in this country in the "good old days" of 50 years ago, and more or less persisted until 25 years ago. The present satisfactory state of seed Potatoes being offered to growers under its own name is one of goodwill existing between the trade, the departments concerned with the classification and certification of varieties, and growers who are not now beguiled into paying extortionate prices for established varieties which have been merely re-named. Under present conditions, a new variety is accepted

from the breeder and is tested in the official trials in England, Scotland and Northern Ireland for distinctness of type and immunity from Wart Disease, and is registered if found to be worthy of recommendation for general cultivation.

For the benefit of those who are inclined to be critical of the varieties in commerce to-day, it is well to compare the present with the past in order to form a degree of appreciation that some good has come out of the "evil of the good old days." A comparison of the number of varieties in the trade makes an interesting study. One book published early in this century lists some 817 "varieties"; whilst another published in 1905—nearly 50 years ago, lists 269 "varieties"—or better still mainly synonymous names.

The position at the present time is that we have approximately 50 varieties certified for seed purposes in the United Kingdom, all of which are grown under their own particular name. Of these, about 40 are established kinds, the remainder being newer introductions in the process of multiplication and distribution. Surely this must be an accepted improvement on the position of trueness to type alone as compared with the old days, and would amaze yet satisfy the writers of the early part of the century, who advocated fewer varieties. It is still argued that there are too many varieties, but it should be remembered that some of them are grown on a very small scale annually to provide for consumers preferences and these vary considerably even within these Isles.

Forty-eight years ago, a lecture was given to this Society by MR. WALTER P. WRIGHT, and it makes interesting reading to-day. He began by saying the ideal Potato had not been found, and set out the main desirable characteristics as being—a heavy cropper—a good cooker—and a disease resister. These features are just as important to-day.

To take up the first point, *heavy croppers*—the demand for feeding a nation during the years of two world wars (when the Potato became our most vital crop) and an ever-increasing demand on production to feed an ever increasing population, has been partially met by the introduction of heavier yielding kinds. The second point of *quality* has been studied to meet consumer preferences in which there is considerable variation, not only between different parts of the country but between individuals, and these preferences include shape of potatoes, texture of flesh when cooked such as the solid or glutinous type to mealy or dry texture; the colour of the flesh either white or yellow; flavour is a distinct individual preference.

MR. WRIGHT's mention of disease resistance is much more complicated for the Potato is subject to something like 50–60 diseases, the main ones being Blight, Virus Diseases, Wart Disease, Dry Rot, wet rots during storage, internal blemishes in the flesh, and so on.

There is much criticism being levelled at the quality of Potatoes at the present time, and consumers are apt to compare it with the quality of that of the "old kinds." I take it that a variety introduced at the end

of the last and the beginning of this century may be classed as a "good old kind," and some of these are still in commerce to-day; so to enlighten these people let us see what our present Potato lists in seedsmen's catalogues include, generally from 12 to 30 varieties are offered according to the firm's Potato activities.

First the earlies, which are always of special interest. MR. WRIGHT put the following in for recommendation as being of *special quality* in 1905:—'Sharpe's Express,' 'Epicure,' 'May Queen,' 'Ninetyfold,' 'Eclipse' and 'Duke of York.'

'Sharpe's Express'—this was introduced into commerce fifty-two years ago and is still freely listed in seedsmen's catalogues, and moreover 2,000 acres are still grown annually, on the farm scale. This white kidney Potato is not as early a bulker as some of the more recently introduced kinds, and it is more popular with gardeners and allotment-holders, and is a good follow-on variety of good mealy texture and pleasant flavour, and good colour when cooked. It is, however, very susceptible to the storage disease Dry Rot, and losses in seed can be very considerable before planting time.

'Epicure'—was introduced in 1897 and even now, fifty-six years later, it is still the leading early in Scotland, where they grow over 10,000 acres each year, but only about 3,000 acres are grown on the farm scale in England because the preference here is strongly in favour of a shallow-eyed kidney or oval; round varieties with deep eyes such as 'Epicure' are not popular on the midland and southern markets, even although it is of admitted good quality, very early and produces good yields on most soils.

'May Queen'—is another old variety mentioned in the early list and belongs to the Victorian age. It has good quality of a dry texture, good flavour and satisfactory cropping capacity, but in recent years it has lost much popularity and the annual acreage is dropping to a very low level. This is due to the variety's very marked susceptibility to the storage disease—Dry Rot—and losses in seed can be very heavy indeed. This is an important economic factor to be considered in dealing with such a high-priced commodity as seed Potatoes are at the present time, and in consequence it is rarely found in price lists nowadays.

'Ninetyfold'—was also included in the 1905 list. This very white-fleshed kidney variety produces good sized potatoes for the very early digs and is still the main early in Cheshire, and that after fifty-six years in cultivation! It requires special knowledge on handling of the seed, owing to its marked susceptibility to Dry Rot, and as with May Queen, seedsmen cannot afford to deal in this variety owing to possible heavy loss in handling it. Its present acreage position in the United Kingdom is similar to that of 'Duke of York' and 'Eclipse.'

'Duke of York'—was also given special mention for quality in 1905. The variety was introduced in 1891, a very old kind now and has been grown continuously for the past sixty-two years. It is still freely listed in catalogues and in this case its synonynous name of 'Midlothian

Early' is frequently quoted, although nowadays seedsmen make reference to the fact that it is 'Duke of York.' It is very interesting to read that MR. WRIGHT stated in 1905—"Midlothian Early—to be tried as a promising novelty!" This fine shaped thick kidney with yellow flesh is still grown on the 5,000 acre scale annually for those consumers who prefer this yellow-fleshed variety of admitted good quality. Mention should be made that in the more northern parts of the British Isles, a white-fleshed Potato is more popular.

'Eclipse'—is still with us, after fifty-six years in general cultivation but it is interesting to see that MR. WRIGHT listed it as a later variety—a second-early under the name of 'Sir John Llewelyn.' This was its popular name years ago, but it is now sold under its correct name of 'Eclipse.' It is agreed that it is not amongst the earliest of bulkers but can be used as a good follow-on after earlier bulking kinds. It is a white kidney with shallow eyes, white flesh and is a consistently good cropper, good quality and quite a good keeper too; trouble in the seed is unusual. We still grow about 4,000 acres annually in the United Kingdom.

I have mentioned a few early varieties of "the vintage years," relics of the good old days, they have stood the test of time and were known and grown when, we are told, "potatoes were potatoes," but—they are still with us and four of them are still available through ordinary trade channels.

Then twenty-eight years ago, these were followed by such varieties as 'Di Vernon' and 'Catriona,' the kidney Potatoes with blue colour in and around the eyes. Both of these early types are dropping out of cultivation and, again, this is mainly due to their marked susceptibility to Dry Rot.

One outstanding heavy yielding variety is 'Arran Pilot' which has now been grown for some twenty-one years. It is the main early in England, easily leading in acreage figures with about 50,000 acres in England alone last year. It is capable of producing good sized white kidney tubers at an early date and, when left to mature, gives heavy crops of large potatoes. It is, however, at its best quality at the time of early digs. Although it is such a popular early, it often gives trouble with Dry Rot in the seed and it requires care in handling. It also requires good light for slower sprout development, otherwise long weak sprouts may rapidly develop and these are easily broken off during planting operations and early bulking may thus be retarded.

'Home Guard'—was first tested in 1935 but has only been in general cultivation for the past ten years. It is now included in all price lists and grown extensively on a commercial scale, up to about 37,000 acres last year in the United Kingdom. It is a consistently good even cropper of regular shaped white oval potatoes. Its texture when cooked is a good average but it would appear to be a variety that readily picks up any taints, resulting in an "off-flavour." This unreliable flavour, resulting from some unknown factors, is causing concern amongst certain growers.

'Arran Pilot' and 'Home Guard' made up nearly three-quarters of the acreage of earlies grown in England last year.

Another early grown in a small way during the past ten years is 'Ulster Chieftain,' but supplies of seed are fairly limited and not easily obtained through ordinary trade sources. It is a variety for very early liftings when the quality is good and shape uniform, but the tubers tend to become coarse and cracked as the season advances.

We have now come to the group of recently introduced earlies and some of these are now appearing in seedsmen's catalogues.

'Ulster Prince'—a white kidney Potato with shallow eyes. It is one of the earliest of bulkers and the tubers become of large size, though not usually very numerous per root. It is not of a mealy texture but the colour is good, and it does not darken on cooking. The variety requires light warm soil conditions. It is a slow sprouter for an early, so is easy to manage during storage and it is not very troublesome with Dry Rot.

'Ulster Premier'—this can be classed as a luxury Potato. The tubers are fine kidney shape with red colour in and around the eyes. Red mottling on the skin (as in 'King Edward') is commonly preferred in England. 'Ulster Premier' produces numerous potatoes at the root and they are of very good quality when cooked—flavour, colour and texture are very satisfactory. The haulm is fairly low and matures off by mid-August; it requires a fine tilth, warm conditions and a covering of not more than 4 inches of soil.

Two new early varieties which may appear in price lists shortly are—'Chancellor'—which gives a good crop of bold white oval potatoes at an early date. It is well worth a trial but as tests of this variety are still proceeding, reports on its general behaviour on various soils and conditions are reserved for the time being.

'Craig's Alliance'—is also a white oval variety but supplies may be limited for some time. It gives good crops at the early digs with plenty of tubers at the root and the quality is considered very good.

In the 1905 second-early group (called "later varieties"), there is mention of 'Sir John Llewelyn,' but this has already been discussed under its correct name of 'Eclipse'; 'British Queen,' 'Nobleman' and 'Royal Kidney' are also mentioned.

'British Queen'—has been grown since 1894 and now—sixty years later—it is still fairly freely offered in the trade and is used as the main second-early in Scotland and Northern Ireland. It is not grown on a field scale in England owing to its susceptibility to Blight. The very short period which has been allowed in the past few years for the movement of second-earlies between the clearance of first-earlies and the appearance of maincrops on the ware markets has influenced the acreage of this and other second-earlies. 'British Queen' is of very good quality for those who prefer a mealy Potato, the colour is very good indeed and flavour pleasant, and it gives a good yield of white oval potatoes. The popularity of a variety can be judged by the number of synonyms, and it is interesting to recall that 'British Queen' has masqueraded under more than 200 different names in the past.

'Nobleman'—was found to be a synonym of the maincrop 'Up-to-Date.'

'Royal Kidney'—is not now grown for the English ware market or offered through ordinary trade sources to small growers. It is, however, grown in Scotland and Lincolnshire for export to Spain and is imported back as new potatoes in the following spring, and to meet this demand about 1,000 acres are grown for seed each year in the United Kingdom. The yield of small ware potatoes of this fifty-three-year-old variety has not proved attractive enough under our efforts of maximum production.

'Arran Banner' and 'Great Scot'—both well known are two varieties with white round tubers with deep eyes. They are often used as second-earlies when lifted immature, and are more attractive as small ware than as very large potatoes which they tend to become later in the season, often coupled with hollow centres, especially where fertilizers are liberally applied. 'Arran Banner' has overshadowed 'Great Scot' and the acreage of the latter has been considerably reduced in later years.

Recent introductions in the second-early group include some interesting kinds—with a 'new look' for this group and that is the red colour on the skin, in and around the eyes. In this direction, we have 'Ulster Ensign'—a variety named seven years ago, and since then it has been tried out under commercial conditions in England. Owing to the fact that its tubers closely resemble 'King Edward,' and good sized ware may be lifted earlier, it is frequently offered to the housewife under the name of 'King Edward.' This is to be deplored, ware potatoes should be on sale under their own name, so that the public may become familiar with them. Such a condition is required of seed Potatoes by law. 'Ulster Ensign' is a very good cropper of attractive potatoes but it is very susceptible to Blight and is not a good keeper, and should be used immediately on lifting or at any rate before mid-August, or before Blight becomes widespread, and when the variety is at its best.

'Craig's Royal'—has been in commerce for the past three or four years, and is at present enjoying great popularity. Again, it has the red colour in and around the eyes but the distribution is variable and often not pronounced, and tubers without colour are common in the crop. The shape is oval to thick kidney, and it is an excellent cropper of good quality potatoes. There is a good demand for seed which is being rapidly built up in Scotland, and supplies should be easy for planting next spring. It is well worth a trial and should be used as a second-early, though it is a better keeper than 'Ulster Ensign.'

'Ulster Emblem'—should be quoted in Potato lists next spring; it is a recent introduction producing bold oval tubers with white skin and shallow eyes. The tubers get to a good size fairly quickly; the quality is good but this may be further improved by the addition of a little extra potash at planting time.

'Ulster Dale'—is a perfect shaped white oval, an extremely good cropper for early August digs, and it makes good foliage cover. At

present it is undergoing extended tests for its quality because it has been found that this variety varies considerably throughout the country. It is already being handled in the trade, and it may be on sale during the coming winter and spring.

Now to study the maincrops of fifty years ago. They had such varieties as 'Langworthy' and 'Golden Wonder' (which is the russet-skinned variation of 'Langworthy'); 'Sutton's Flourball' which was grown before 1880; 'Champion' was grown even earlier—seventy-five years ago; 'Windsor Castle' introduced sixty years ago; 'Magnum Bonum' introduced more than seventy years; 'Northern Star' and 'Evergood.' 'King Edward' was also recommended. It is interesting to note that MR. WRIGHT'S 1905 list included 'Dalmeny Beauty,' 'Duchess of Cornwall,' 'Factor,' 'Highlander,' 'Scottish Triumph,' 'Sensation' and 'Warrior,' but he did mention that all these were "heavy croppers of the 'Up-to-Date' type." They have now been classed as 'Up-to-Date,' and the names exist only on record.

'Up-to-Date'—the above-mentioned synonyms of 'Up-to-Date' are only a few of some hundreds of names which have been given to this maincrop variety in the past. It is sixty years since it was first put on the market, and for those who still prefer the old 'Up-to-Date,' under its proper name though, it is still available. About 4,000 acres are grown annually in Scotland and Northern Ireland for seed purposes for export to parts of Africa and Mediterranean countries, where it still proves one of the most satisfactory varieties. It is not grown much in England because of its susceptibility to Blight and Wart Disease, but it gives good return crops of fine-shaped white oval potatoes.

'King Edward'—the red-mottled oval maincrop, known as our "quality Potato" was included in the earlier lists as a comparatively new kind. Here is a variety which was grown and recommended nearly fifty years ago and is still first favourite in the maincrop group and well over 100,000 acres are grown each year in the United Kingdom.

'Red King Edward'—known in the trade as 'Red King' is a red-skinned selection out of 'King Edward' and is identical in every way except that the skin is all-red instead of mottled red.

'Majestic'—which is our leading white kidney maincrop was not raised until 1912 but, as it is over forty years old, it may be classed as an "old kind." 'Majestic' and 'King Edward' together with 'Red King Edward' are the leading maincrop varieties grown in England where they themselves covered nearly 60 per cent. of the total of all varieties in 1952, and it will take outstanding varieties to oust them from their present position.

Amongst the varieties mentioned by MR. WRIGHT in 1905 was 'Golden Wonder' which is still grown as a commercial variety, in fact it is the "quality Potato" in Scotland, and they grow an annual acreage of over 5,000 to meet their own demand for this variety. It is a dry mealy type of texture when cooked and of good colour and flavour; it is a very shy sprouter and very good keeper until the following late spring,

but its cropping power and tuber size is small. 'Golden Wonder' was first grown seventy-seven years ago under the name of 'Maincrop' and was exhibited at Crystal Palace in 1904.

During the past twenty-five years we had had many varieties and amongst these are—

'Doon Star'—a white oval now being grown on a much smaller scale than five years ago because of its marked susceptibility to Dry Rot. This is another case where the trade cannot stand the financial losses which are frequently incurred through this disease.

'Gladstone'—has thick oval tubers with red colour on the skin. It was at the height of its popularity about ten years ago but is now going out of favour owing to its great susceptibility to Blight ; also it gives trouble with hollow centres in wet seasons.

'Arran Peak'—is a good cropping white oval of regular shape and with a thick skin and has a reputation as a good keeper, but its cooking quality is very variable and it cannot, therefore, be considered first class. Now that 'Majestic' supplies have become easier, the acreage of 'Arran Peak' has shown a marked decrease—this shows a trend towards a preference for better quality.

White oval late maincrops such as 'Dunbar Standard' and 'Arran Consul' are established only in a small way. They are fairly difficult to handle on a field scale because of their later haulm maturity.

'Kerr's Pink' and 'Redskin'—are our two pink round varieties and are the two winter varieties used in Scotland and the more northern parts of England. In other parts of the country this type of coloured round with fairly deep eyes is not at all popular. 'Kerr's Pink' has been in commerce for forty-six years and is therefore, an old kind, but 'Redskin' was introduced nineteen years ago. Seed of both varieties is freely available.

'Stormont Dawn'—a late maincrop, was introduced in 1942 and so, after only ten years, it has reached a very low level in acreage. It is a good cropper of even shaped oval Potatoes with a thick brown skin, but it has proved very difficult to obtain and harvest a full mature crop on a field scale. Unripe Potatoes of this variety often develop internal blemishes during storage.

Some of the more recently introduced varieties in the maincrop class are—

'Dr. McIntosh'—this is quite well established throughout the country at the present time and seed supplies are plentiful. It is an early maincrop of good regular shaped kidney tubers with white skin and shallow eyes. and is not prone to second-growth, *i.e.*, cracking or hollow centres. It is not a mealy texture when cooked, and also it does not show up to the best advantage as a cropper in a dry season, when it is slower in development.

'Conference'—is a Potato with pale yellow flesh and even shaped white oval tubers of small ware size. This variety is proving most successful as a suitable kind for crisp manufacture because of its flesh

colour and general good quality. It has also a reputation as a good keeper.

'Ulster Supreme'—is slightly later than 'Majestic' in maturity. The tubers are of good shape, white oval or thick kidney with shallow eyes and white flesh. It has proved to be one of our heaviest croppers, but care should be taken to see that the variety is fully mature and tubers well ripened off before storing for winter use.

There are several other new varieties but they are of little importance in English Potato culture at present.

On reviewing the acreage figures, it is staggering to find that, even in view of the introduction of numerous varieties during the past twenty-five years, the old kinds of forty to fifty or more years ago cover well over half of our Potato acreage in England to-day (this does not, of course, include 'Arran Peak' and 'Home Guard,' our leading earlies), and yet quality is being criticized.

Is it a change in preference or taste, or prejudice against the adoption of a new variety? Prejudice does exist, for instance, a stock which used to be bought under a synonymous name was thought to be better than the same variety under its own name, surely a habit of personal preference only. Perhaps it would help in this direction if retailers displayed the name of the ware potatoes offered for sale, especially if a new variety.

Is it bad storage or presentation? The offering of earlies on the markets or shops in a stale state with marked evidence of greening is a waste of good and now rather expensive food. The marketing of earlies in hessian sacks is not as satisfactory as the old method of sending them off the farm in barrels. New Potatoes should not be exposed to light and they should be handled with more care to avoid excessive bruising.

Is it bad dressing? Farmers should realize that all the potatoes from a crop are not fit for sale to the housewife; very small potatoes are not wanted; very large coarse and ungainly ones, often with cracks or hollow centres are most undesirable and wasteful and it is deplorable that they should be included in a housewife's purchase. Some varieties are more susceptible to second-growth than others, but it is in the main a seasonal effect and occurs when plants have commenced to ripen and when growth has been re-induced by altered weather conditions. There are several forms of second-growth—cracking, protuberances from the eyes and hollow centres. It has been reported that there is a greater tendency to blackening after cooking in potatoes suffering from these defects, as well as uneven cooking, some parts sloughing off, while other parts remain firm. The newer varieties are substantially resistant to second-growth symptoms.

Is it flavour? Flavour should be mild but not insipid. Potatoes will pick up taints and bags which have previously contained fertilizers are most unsuitable containers for storing ware potatoes. Stale or slightly greened potatoes lose their pleasant flavour, and any earthy or bitter taste is objectionable.

Is it complaint against diseased Potatoes? *Scab* on the skin of a potato does not affect quality, in fact there have been cases when it was thought that a scabbed potato was of superior quality. It is only a superficial defect and wastage on preparation for cooking is negligible. *Blighted* potatoes should not leave the farm but should be diverted for cattle food. All our commercial varieties, old and new, are more or less susceptible to Blight and it is up to the grower to protect his crop as far as possible. It is hoped in the near future that satisfactory varieties resistant to various diseases will be produced by scientists who are now breeding Potatoes on these lines.

There is no evidence of deterioration in quality of the "old kinds" in the passage of time, so other factors must be effective where complaints are being levelled at Potatoes. Quality is difficult to define and the ultimate criterion is the cooked sample. This brings in the question of blackening. The influence of soil type and manuring on quality is still not fully understood. It seems that the issue is exceedingly complex and the results obtained under one set of conditions do not hold good under other conditions.

The most extensive work on this subject has been carried out by the Long Ashton Research Station and their evidence suggests that quality is more affected by existing characteristics of the site and variety, rather than by fertilizer treatment. It is true that a correction of mineral deficiencies gave some improvement in general quality but this was limited by other factors. For example, the application of potash fertilizers on the light fen soils, notoriously short of potash, brought about an improvement in the colour of the cooked sample, but this did not take place under other soil conditions. Correction of phosphate shortages did not influence quality.

The Long Ashton work found that neither yield nor quality was adversely affected by application of chloride containing fertilizers (*e.g.* Muriate of Potash rather than Sulphate of Potash) and yet the belief that this is so is quite prevalent. Here again it may well be that the combination of soil type, variety and fertilizer treatment produces extremely variable results under varying conditions.

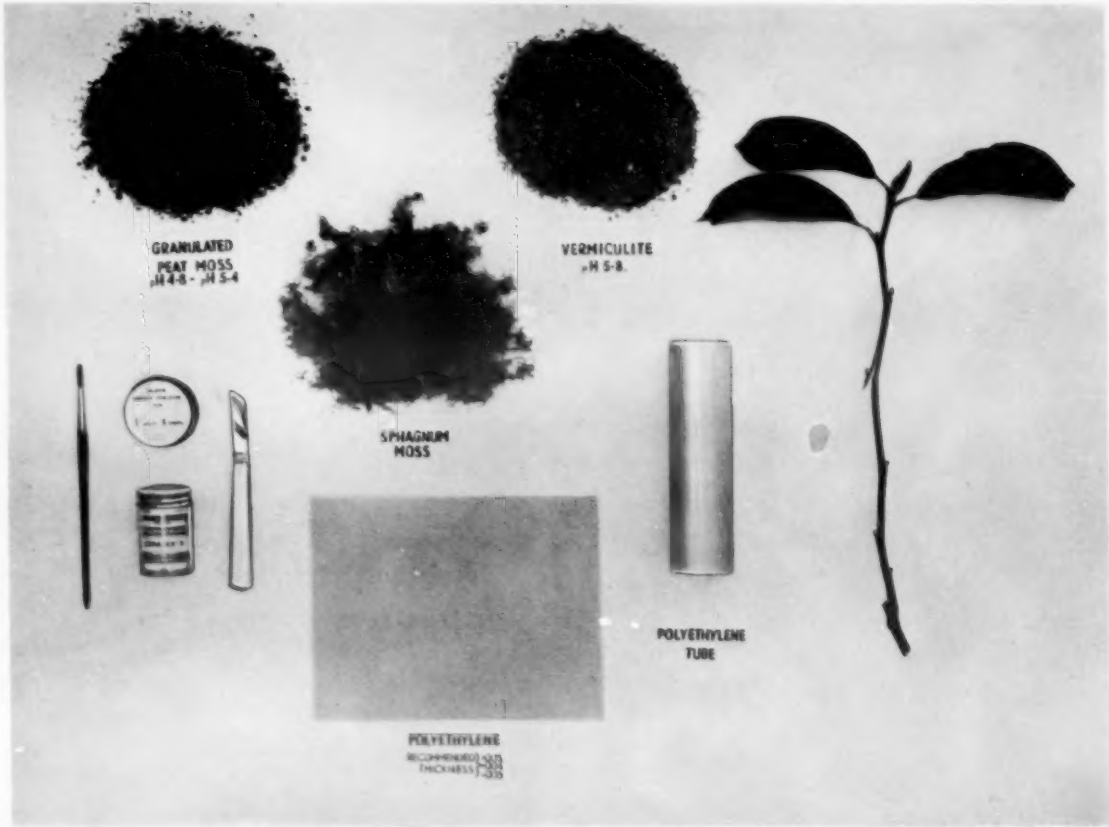
Scottish results indicate that excessive nitrogenous manuring adversely affects cooking quality and so far no evidence has been put forward to refute this suggestion. But then good quality Potatoes are often grown on the Lincolnshire silts with dressings of 15 cwt. or more per acre of a compound fertilizer containing 12 per cent. of nitrogen!

Obviously we cannot categorize the causes of good and bad quality, and there is need for a considerable volume of work on this problem, which incidentally is proceeding.

New varieties are being given extensive tests for quality, so that they may be recommended as being worthy of trial to see if they suit the growers' type of soil, cultivations, growing conditions and consumer preference.

Photo, W. Abbing

FIG. 26—*Prunus* × Incam 'Okamé,' Award of Garden Merit, 417 (See p. 130)



Photo, R. P. Scase

AIR LAYERING EXPERIMENTS AT WISLEY

FIG. 27—The materials required

Photos, R. P. Scase

FIG. 28—Air layer on *Prunus serrulata* 'Amanogawa' with tubular film lifted to show roots

FIG. 29—A plant of *Acer insigne* obtained by air layering

FIG. 30—Branches prepared for air layering and an air layer made on *Magnolia Soulangeana*

MAGNOLIA SOULANGEANA
ALKATHENE 010 SERADIX R 1.
AIR LAYERED 25. APRIL 1952.
MAGNOLIA SOULANGEANA ALBA SUPERBA
ALKATHENE 035 SERADIX R 5.
AIR LAYERED 26. APRIL 1952.

Photos, R. P. Scase

FIG. 31—The air layers fixed on branches of *Magnolia Soulangeana*

FIG. 32—A plant of *Acer palmatum atropurpureum* derived from air layering

Photos, R. P. Scase

FIG. 33—Plants of *Lonicera fragrantissima* and *Magnolia Soulangeana* 'Lennei' derived from air layering

Photo, West Advertising Ltd.

FIG. 34—Drift of *Cyclamen neapolitanum* in the gardens of MRS. FRANCES MALLETT, Longwood, Bath. These Cyclamens were started with three corms in 1920, and now through seeding and re-seeding include white and pink forms and many intermediate shades

FIG. 35—Colchicums in the gardens of MRS. FRANCES MALLETT, Longwood, Bath (See p. 127)

FIG. 36—*Aerva javanica* near Elath in Palestine (See p. 139)

During the past thirty years hundreds of Potato seedlings have been tested and numerous kinds have been put into commerce by the trade itself, but in many cases their life has been short owing to certain defects —and so I end up my talk to-day with the same remarks with which MR. WRIGHT began his lecture nearly fifty years ago—"The perfect potato still does not exist."

AWARD OF GARDEN MERIT—LXXXVII

H. R. Fletcher, Ph.D., D.Sc.

COLCHICUM

None can fail to appreciate the beauty of the great autumn flowers of this genus which cause the bare earth to glow with many shades of rosy pink and mauve and with white. So magnificent and vital are the plants at this time of year, when practically the rest of the garden either is dormant or preparing to be so, that the enthusiastic gardener is urged to plant the large irregularly shaped corms in every conceivable place, quite forgetting that the Colchicum is a plant whose leaves in spring and early summer to most people give as much disappointment as the flowers give pleasure in the autumn. Unfolding, the leaves are handsome enough; but they grow greater and greater, all the while occupying more space, until, in June, they begin to fade, gradually collapsing flabby and yellow and a sorry sight among summer flowers. The temptation to carry this decaying foliage to the rubbish heap is strong but must be resisted; for it is unwise for the plant's sake to remove the leaves before they are quite dry and the stems whilst they are still fleshy. When the time comes for the debris to go there is left a great patch of bare earth which as often as not must remain thus. It is all a little depressing and the only worth while attitude to adopt is to realize that the great mass of slowly ripening foliage surely must promise a glowing carpet of brilliant flower later in the year.

The plants described below are of easy cultivation. Place the corms 3 or 4 inches deep in good soil, preferably in a sunny situation, and leave them undisturbed. On the other hand if it be desired to obtain a stock quickly the corms should be lifted every second year, in July, divided, and replanted immediately. Another method of increase is by seed which should be sown either in pans in a cold frame or out of doors in a sheltered spot in a good seed bed, the seed being lightly covered with fine soil. Watering should be done in dry weather up to the end of July. When two years old they may be transplanted into nursery beds where they should remain until they flower when, three, four or five years old.

414 COLCHICUM SPECIOSUM *var.* ATRORUBENS

Award of Garden Merit, April 8, 1952

Colchicum speciosum has a wide geographical range in the Caucasus, whence it was introduced about 1828, Asia Minor and North Persia. The very large irregular shaped corms, usually with a long neck and covered with rich brown scales or tunics, are very free flowering, three or four tulip-shaped deep lilac flowers frequently being produced by the flowering shoot and making a lovely splash of colour on the bare earth from August throughout September, even into October. The stout sturdy flower-tube often is 9–10 inches long though a third of this may be below ground according to the depth of the planting of the corms. When the flowers first appear above ground the tube is cream in colour and stained with lilac at the apex, the staining deepening with age. In gardens the species seeds freely and the resulting seedlings vary in colour and in size. Several outstanding forms, varying from white to deep purple have been raised in the nurseries of Messrs. Backhouse of York and one such, *C. speciosum* var. *album* with snow white cups standing on soft emerald green tubes was given the Award of Garden Merit on October 6, 1924.

C. speciosum var. *atrorubens* probably is the finest of the purple forms, the young white flowering shoots with their purple tips piercing the ground early in September when the flowers of several of the garden raised hybrids such as ' Princess Astrid ' and ' Rubens ' are brown and withered. The flower-tube is remarkably stiff and strong, deeply stained with purple in the upper half, and holds erect for a considerable time the purple goblet of great substance. Among the many plants grown at Wisley there was some variation in colour when matched with the R.H.S. Colour Chart, variation from Petunia Purple (H.C.C. 32) to Imperial Purple (H.C.C. 33/2), with the reverse of the petals Imperial Purple (H.C.C. 33/1). The pigment pales away towards the base of the petal which is creamy white and a creamy white channel runs half way up the middle of each petal. Thus the more the flower opens in the sunshine, only thus showing the true size and shape of the petals which are broadly elliptic and up to 3 inches long and 1½ inch broad, the more the pale base of the flower is accentuated and the more it contrasts with the rich glowing purple of the rest of the flower which in the shade shows a faint tinge of blue.

Closely allied and, in fact, hardly to be separated is *C. speciosum* var. *rubrum*. At Wisley in 1953 it opened its slightly paler flowers a few days earlier than *atrorubens*.

415 COLCHICUM × 'PRINCESS ASTRID'

Award of Garden Merit, April 8, 1952

MR. E. A. BOWLES, in the 1952 Revised Edition of his *Handbook of Crocus and Colchicum for Gardeners* recounts how at the beginning of the present century Messrs. Zocker & Co. of Haarlem owned a

nursery which now has entirely disappeared. The head of the firm, MR. J. J. KERBERT, between 1900 and 1905 raised a great number of fine chequered seedlings by crossing the forms then known in gardens as *Colchicum Bornmülleri* and *C. giganteum* but which now are known to be only larger and earlier flowering forms of *C. speciosum*, with the large flowered chequered species from Greece which at that time was thought to be *C. Sibthorpii* but which now is recognized as being quite distinct from this species and must be called in future *C. Bowlesiana*. Many of the Zocker seedlings were named and distributed by several Dutch firms and it would appear that some are so very much alike as hardly to warrant distinguishing names. One of the finest and one of the first of the larger flowered Colchicums of the autumn season to colour the bare ground is ' Princess Astrid.' The flower-tube elongates rapidly and by the time it is mature the flower may be up to 12 inch in length from the apex of the corm. In the largest flowers the broadly elliptic petals, round at the apex, may be 3·5 inches long and 1·5 inch broad. The overall colour of the petals is Bishop's Violet (H.C.C. between 34/1 and 34/2). In the region of the petal margin there are conspicuous tessellations of Bishop's Violet and creamy white. Gradually the violet pales towards the petal base which is creamy white and minutely veined with violet. The white base of the flower cup is best seen when the flower is opened wide by the sun. Although quite sturdy the long tube after standing erect for a few days bends, sometimes at the middle, sometimes at the base, and the flower lies on the ground still opening wide for a day or two in the sunshine. In his Handbook MR. BOWLES has stated that in his experience the flowering periods of ' Princess Astrid,' ' Rubens ' and ' Autumn Queen ' are so simultaneous and that these plants resemble one another so closely that they may be one original stock bearing different names. Morphologically they can hardly be separated, but at Wisley in 1953 the plants bearing these three names did not flower simultaneously. ' Rubens ' was the first of all the garden hybrid forms to flower and the blooms were brown and withered when those of ' Princess Astrid ' were at their most beautiful. ' Autumn Queen ' was noticeably the last of the three to bloom, being in full flower at least a week after the blooms of ' Princess Astrid ' were faded. Between them they flower from early August to mid-September.

Three other tessellated forms prolong the blooming period of these lovely garden flowers. The elliptical or slightly obovate petals of ' Violet Queen ' are of good substance and of Imperial Purple (H.C.C. between 33/1 and 33/2) and are most beautifully and finely tessellated. When fully open the white delicately violet-tinged base of the cup is seen to vary considerably; sometimes it is small, sometimes most conspicuous; but always the central white channels are present and the impression is that of a six-pointed white star on a purple background. ' Conquest ' and ' President Coolidge ' are much the same in colour, the large white throat of the former contrasting beautifully with the rich purple of the rest of the flower.

Of greater size than these, though of less firm texture and much less tessellated, are the flowers of ' Giant ' and ' Premier.' Rose Purple (H.C.C. 533) best describes the elliptic petals which may be 4 inches or more long and 1½ inch broad. Shade will not prevent them from opening wide their tulip-like flowers which in the third week in September at Wisley were mostly fully open at 7 A.M. and at 7 P.M.

416 COLCHICUM × 'MR. KERBERT'

Award of Garden Merit, April 8, 1952

Some form of *C. speciosum* no doubt was one of the parents of ' Mr. Kerbert ' and his relatives, but there appears to be no reliable information as to the other. The amount of tessellation is so slight and the petals so narrow and unlike those of ' Princess Astrid ' and her chequered kin that almost certainly *C. Bowlesiana* did not play a role in the creation of these fine plants. Perhaps a form of *C. autumnale* was used. Be that as it may, ' Mr. Kerbert' with more fragile habit and beauty is well worthy of a place beside the more robust and spectacular broad-petalled tessellated hybrids. Cobalt Violet (H.C.C. 634/2) deeper stained at the apex and gradually paling at the base to white best describes the colour of the delicate oblong obtuse petals, 2–3 inches long, ½–1 inch broad, which are carried 6–8 inches above ground on a slender tube. Very closely akin is 'Lilac Wonder' (F.C.C. Haarlem, 1927), which, however, is less white in the throat, in fact the white of the throat can be seen only when the petals are forced open at the base or when the hot sun opens wide the flowers. A further slight distinction lies in the colour of the long styles which are white in ' Lilac Wonder ' and tinged with lilac in 'Mr. Kerbert.' Not for long do the slender tubes of these plants stand erect; quite quickly they lie horizontally on the ground and there the flowers continue for some days to open wide even, as at Wisley, in the shade of *Magnolia acuminata*.

417 PRUNUS × INCAM 'OKAMÉ'

Award of Garden Merit, July 22, 1952

For many years CAPTAIN COLLINGWOOD INGRAM has been hybridizing the species of the genus Prunus in which he is particularly interested. One of his main endeavours has been to produce a Cherry with deep pink blossom which would be perfectly hardy. Very naturally he chose for one parent *P. campanulata* which was introduced into cultivation a little over fifty years ago from Formosa. It is a beautiful plant with in late February and March intense crimson pendulous bell-shaped flowers each ¾-inch long and borne in stalked clusters of 2 to 6. Unfortunately it is rather tender and in most districts in this country best succeeds in a cool house, where, however, the flowers lose a little of their deep colouring. It is figured in the *Botanical Magazine* (t. 9575) and gained the Award of Merit from the R.H.S. in 1935.

The other parent of CAPTAIN INGRAM'S choice was *P. incisa* which grows wild on the slopes of Fujiyama and has many good points to recommend it for such a purpose as his. It is very neat and graceful, is extremely hardy, and will thrive whether planted in sunshine or in shadow. It is also extremely floriferous, in early April covering itself, before the leaves appear, with a profusion of white flowers which, because the red-stained calyx segments show between the petals, seem to be flushed with pink. The Award of Merit was given to it in 1927, and the Award of Garden Merit in 1930.

CAPTAIN INGRAM applied the pollen of *P. campanulata* to the stigmas of *P. incisa*. As the former matures its flowers before the latter, he had perforce to preserve the ripe pollen of *P. campanulata* until the stigmas of *P. incisa* were ripe for reception. This he did in a Thermos flask maintained at an even temperature and in a completely dry state. Under such conditions apparently the pollen remains viable for 8 or 9 weeks. The off-spring of this cross are perfectly hardy, produce an abundance of bloom in March and immediately afterwards fine dainty foliage, and are collectively called 'Incam.' The best of these 'Incam' seedlings is 'Okamé' (Fig. 26).

It forms a graceful fairly compact plant which is not too big for any garden. All through March (unless the bullfinches forbid) it carries a profusion of flower. Two to three flowers on stalks half an inch long are produced from each reddish-brown flower bud. The petals of the open flower are of Fuchsine Pink (H.C.C. 627/2 deepening at the tips to H.C.C. 627/1), but the colour of the centre of the flower is intensified because the filaments of the stamens are slightly darker in tone than the petals which moreover allow the red-stained calyx segments to show between them. *P.* × Incam 'Okamé' is of easy cultivation ; it is not particular as to soil so long as it is not too dry or water-logged ; and it propagates most readily from cuttings.

418 RHODODENDRON × 'JOHN CAIRNS'

Award of Garden Merit, June 10, 1952

After trial at Wisley this evergreen hybrid received the Award of Merit in 1940. It is one of the many excellent garden plants which collectively are known as the *Kaempferi Hybrids* or the *malvaticum Hybrids*. The parents are *R. malvaticum* and *P. obtusum* var. *Kaempferi*. Little is to be found in horticultural literature concerning the history of *R. malvaticum*. According to the *Azalea Handbook* published in 1952 by the American Horticultural Society, the name *malvaticum* was given by P. M. KOSTER to a stray seedling found among a group of the brilliant red-flowered 'Hi-no-degiri' imported from Japan to Boskoop, Holland, about forty-five years ago. 'Hi-no-degiri' is a colour variant of *R. obtusum* f. *japonicum* which is the name of a race of small-flowered Rhododendrons whose home is the wind-swept slopes of Nishi-Kirishima an active volcano in South Kyushu, and which is the wild parent of the

race of garden plants known as 'Kurume Azaleas.' KOSTER's stray seedling differed from 'Hi-no-degiri' in having larger purple flowers. *R. obtusum* var. *Kaempferi* is the mountain Rhododendron of Japan where it ranges in altitude from sea level to 5,000 feet and where in May or June its flowers stain the mountain slopes with brilliant red. The flower colour is not constant for there are forms with white, pale pink, salmon-mauve, purple and magenta flowers.

Rhododendron × 'John Cairns' is of low-growing spreading and free-flowering habit. The dark green spring leaves, elliptic to oblanceolate in shape and up to ¾-inch long, in winter are as much as 2 inches long and 1-inch broad and at all times are thinly covered above and below with soft straight hairs. For an evergreen they are rather thin in texture. Arranged in twos or threes in a flat-headed truss, the flowers are open funnel-shaped and up to 2 inches across. A shade of Geranium Lake (H.C.C. between 20 and 20/1) with a few darker spots on the upper petals best describes the colour of the corolla. Others of these hybrids no less desirable are 'Alice' with flowers of orange-red, 'Betty' a bright rose, 'Cleopatra' a rosy-pink, and the mauve 'Gretchen.' All make neat compact dwarf shrubs; all are abundantly floriferous; all are quite hardy and ideally suited to the small modern garden situated on a lime-free soil.

419 RHODODENDRON × 'PINK PEARL'

Award of Garden Merit, July 22, 1952

This best known of all Rhododendrons, so familiar as not to need description here and a best seller to-day as it was at the turn of the century, was deemed so desirable a plant over fifty years ago that by 1900 it had been awarded the Society's Award of Merit and First Class Certificate. Perfectly amenable in cultivation in any lime-free soil, of good foliage and habit, especially when grown in the open (in half shade it tends to become a little straggly), it can be depended on to cover itself year after year with large well-formed trusses of flowers, flowers which when in bud are a deep rose and when fully opened a soft pink. The combination of colour in a half-opened truss is most attractive. Later a faint stain of blue touches the fading petals.

'Pink Pearl' was raised by the late MR. JOHN WATERER. His aim was to produce a perfectly hardy Rhododendron with the beauty of the white flowered *R. Griffithianum*, a native of Sikkim and Bhutan, introduced in 1849, in many respects the finest of all Rhododendrons, which although not hardy in most gardens has been the progenitor in part of several magnificent hardy hybrids. Records from the Waterer Nursery at Bagshot reveal that the parentage of 'Pink Pearl' was 'George Hardy' whose blush flowers fade to white and in which the influence of *R. Griffithianum* is very strong, and 'Broughtonii,' an old close-growing rosy-crimson flowered *R. arboreum* hybrid.

Much use has been made of 'Pink Pearl' for hybridizing especially by the Dutch. 'Professor Hugo de Vries' is a hybrid between 'Pink

Pearl' and the scarlet-crimson 'Doncaster' and was raised by MR. L. J. ENDTZ of Boskoop. To all intents and purposes this hybrid is the same as 'Countess of Derby' ('Pink Pearl × 'Cynthia') raised at the Sunningdale Nurseries by the late MR. HARRY WHITE. Both have flowers of a deeper hue than 'Pink Pearl.' Likewise deeper in colour, although a little smaller, are the flowers of 'Souvenir de Dr. S. Endtz,' a cross between 'Pink Pearl' and the crimson 'John Waterer,' whilst 'Hollandia' ('Pink Pearl' × 'Charles Dickens') has flowers of deep rosy-crimson. 'Mother of Pearl' is not a hybrid ; it is a sport, and a very beautiful one, of 'Pink Pearl,' in habit and foliage scarcely to be separated from this plant but with flowers of the purest white opening from pale pink buds.

420 SORBUS VILMORINII

Award of Garden Merit, July 7, 1953

Only one member of this beautiful genus of autumn colouring and fruiting plants previously has been given the Award of Garden Merit, *Sorbus discolor* in 1930. The chief garden value of this northern Chinese species lies in the splendour of its autumn colouring which probably is unsurpassed in the genus. *S. Vilmorinii* likewise has fine autumn tints, the leaves turning purplish bronze, and it is a better all-round shrub than *S. discolor*, having been described as one of the best shrubs for all seasons of the year that have been introduced from China. It attains not too great a size, between 10–20 feet high, and is noted for its rather spreading habit and graceful arching branches. The dark-green fernlike leaves, each pinnately divided into 19–29 leaflets and with attractive red foot-stalks, accentuate the elegant grace of the plant. In spring when the young flowering shoots appear they are a delicate dull red being covered with a rusty pubescence. Appearing in late May or early June, the white flowers are arranged in rather flat loose clusters up to 3 inches across and are in no wise remarkable. But they set freely and each head of flowers is transformed into a handsome cluster of fruits which are attractive throughout the season unto the end of October. At first they are a bright rosy red but slowly the colour fades to pink and finally to creamy white with a faint flush. Delightful as is this plant at all seasons of the year there is no doubt but that its main attraction lies in the changing beauty of its fruits.

S. Vilmorinii is perfectly hardy, succeeding in any medium moist loam, especially when planted in nearly full sun, and can be propagated readily by any of the methods of propagation usual in the genus, budding, grafting, cuttings, layers or seeds. It is a native of Szechwan (Sikang) and Yunnan, South-West China. Herbarium specimens collected on the summit of Mount Omei were sent to Kew by FABER in 1887. HENRY, a few years later recorded it in the same locality and still later FORREST gathered specimens on several occasions. It was introduced to Kew in 1905 having been raised originally by MR. M. L. DE VILMORIN at Les Barres from seeds collected by DELAVAY in 1889. In 1916 it received the Award of Merit.

PLANT AND PROBLEMS III

CULTIVATION OF LILIES

1. *Question.* I have a chance of procuring offsets of *Lilium giganteum*. How best can I deal with them? I have plenty of deciduous shade with reasonable depth of soil and leafmould, but there are a certain number of Scotch firs about and many pine needles cover the soil. Is there any serious objection to this? I could find places 30 or 40 yards away from the nearest conifer.

I have some other Lilies—*L. regale*, *L. tigrinum*, *L.* × *testaceum* and *L. bulbiferum* var. *croceum* which do not appear to be doing as well as they should after moving to specially prepared plots, properly drained. A good many pine needles fall upon them. Would this account for falling off in size? An alternative explanation may be last year's drought which was serious here.

Answer. The best and most successful way of growing on your offsets of *Lilium giganteum* is to plant them on a North border in well-prepared soil in the kitchen garden. These plants flourish in a deeply dug, well-manured soil, with plenty of moisture. Should you of necessity have to grow them in your woodland they would not succeed in a position where the pine needles fall, for we consider the position would be far too dry.

Lilium regale, *tigrinum*, × *testaceum* and *bulbiferum* var. *croceum* again all like a sunny, well-drained position with plenty of moisture and a loamy soil.

PRUNING OF CAMELLIAS

2. *Question.* In a cold greenhouse I have three very vigorous Camellias of very great age, probably 150 years old. As they are fast growing through the roof I would be grateful for your advice as to how they should be pruned, if indeed these plants can be pruned.

Answer. Camellias respond to pruning quite well and may be cut back fairly hard. Without seeing the house and the plants it is difficult to give definite instructions other than to say that the best time to prune hard back is immediately after flowering. If after pruning the plants are given frequent daily syringings they will break and grow away strongly. Do not interpret hard pruning to mean that a branch must be cut right back to the trunk; it is preferable to leave approximately 2 feet of the side branch. On the other hand it may not be necessary for you to cut your plants quite so hard. The actual amount cut away must be left to your own judgment. After such drastic treatment it is probable that the plants will not flower the following year.

SOIL ACIDITY FOR RHODODENDRONS

3. *Question.* In the past I have not grown Rhododendrons because I was given to understand that my soil contained lime. On analysis

of my soil I find that the average *p*H is 6·1 and the calcium content varies between 0·02 and 0·43 per cent. The top soil is a light loam with a sand and gravel subsoil 8 in. below the surface and lacks humus. Under these conditions is it possible for me to grow Rhododendrons with the cultivation of which I am very anxious to succeed?

Answer. A *p*H of 6·1 is rather on the high side for the successful cultivation of many of the species of Rhododendron, but we think it would be possible for you to grow successfully many of the hardy Rhododendron hybrids, especially those which are grafted on to *Rhododendron ponticum* rootstocks, for *R. ponticum* can be grown successfully in soils varying in *p*H from 4·5 to 6·2. As your top soil is lacking in humus, we would strongly advise you to incorporate into the top soil when planting both granulated peat and leaf mould.

THE CULTIVATION OF SWEET CORN

4. *Question.* I should appreciate your advice on the growing of Sweet Corn on a garden scale in Kent. Could you also name suitable varieties?

Answer. We would advise that the ground should be well dug during the winter incorporating a generous dressing of well-rotted farmyard manure or compost. At the end of April apply a base dressing of

1 oz. per square yard Sulphate of Ammonia;
3 oz. per square yard Superphosphate;
1 oz. per square yard Sulphate of Potash.

The seed can be sown either in the greenhouse or directly into the open ground. If the plants are raised under glass the seed should be sown in 3-inch pots in the second week of April. Planting out takes place in late May. The plants are put out in a double row 18 inches apart with 15 inches between the plants in the row. If more than one double row is grown the double rows should be spaced 3 feet apart.

For outside sowing two seeds are placed in mid-May in a dibber hole 1½ inch deep, thinning later to one plant where necessary. Distances of sowing are the same as for planting out given above.

Suitable varieties include 'Golden Bantam' and 'John Innes Hybrid.'

THE GROWING OF HORSE RADISH

5. *Question.* Would you please let me have details regarding the growing of Horse Radish?

Answer. The ground should be deeply cultivated during the winter. If the land is in good heart no farmyard manure should be

necessary. However, if it is applied it should be incorporated at least two spits deep. In March the thongs are planted 2 feet apart in dibber holes 10 inches deep. The thongs are made by taking roots of between $\frac{1}{4}$ and $\frac{1}{2}$-inch thickness and cutting into pieces 4 to 5 inches long. Subsequent treatment consists of hoeing, to keep free of weeds, and the removal of side shoots. Roots of the size suitable for culinary purposes will be obtained after two seasons' growth.

MANURIAL TREATMENT OF NEWLY PLANTED FRUIT TREES

6. *Question.* This winter I have planted several fruit trees in my garden. What manurial treatment do you advise for these this year?

Answer. As with all newly planted trees, the development of healthy new roots is imperative if the tree is to succeed. The early drying out of soils by wind and sun can seriously hamper this process and the most effective way of guarding against this is to apply a liberal surface mulch of well-decayed manure, compost or leaf-mould. Such a mulch is invaluable as apart from retaining moisture it acts as a weak feed and, if applied thickly enough, will smother weeds. It should be placed around the trees in early spring whilst the soil is still moist and should extend at least as far as the spread of the branches, but should be kept just clear of the base of the trunk. Provided adequate preparation of the soil was made prior to planting this should be all the manurial treatment that is necessary during the first year.

LILAC BLIGHT

7. *Question.* I have a Lilac bush and each spring some of the flower trusses suddenly turn brown and hang down. Some of the young shoots also become blackened about 6 inches from their tips and hang down at that point. Is this condition due to frost or is it a disease?

Answer. Although the symptoms described by you may, in some seasons, be due to late frosts, the same kind of symptom is often caused by the disease known as Lilac Blight. This is the result of attack by a bacterium called *Pseudomonas syringae*, and you may notice small angular brown spots on the older leaves as well as the shoot attack. The bacteria live in small pockets on young shoots and over-winter in this way. The remedy is to cut back the affected portions of shoots or flower trusses to a healthy bud. This treatment should be sufficient to keep the disease down, but in the case of young bushes a following spray with Bordeaux mixture or Colloidal Copper plus a good wetter is advisable.

IRIS RHIZOME ROT

8. *Question.* My bearded Irises suffer from a rot at the leaf bases and the leaves turn yellow and fall over. What can I do to prevent this?

Answer. Your trouble is called Iris Rhizome Rot and is caused by *Bacterium carotovorum* of which there are many different strains which attack and rot such plants as Carrots, Celery, Potatoes, Turnips, etc., etc. Although the one attacking Iris may be seen first at the leaf bases the real injury is in the rhizome which develops a wet mushy rot in moist conditions, but in hot weather may dry out and not be noticeable. The disease is most serious in wet or waterlogged soils in which it is likely to spread quickly. The remedy is to cut out any rhizomes affected by the rot and to dust the cut surfaces, as well as the rest of the rhizomes and even the neighbouring plants, with a good copper lime dust. It should be emphasized that the rhizomes should be planted shallow and always in a well-drained soil. On alkaline soils a dressing of superphosphate can be raked in early in the year, and on other soils a dressing of a complete fertilizer is beneficial. Liming as a practice is not advised as it appears to encourage the rhizome rot.

ERADICATION OF SLUGS

9. *Question.* My garden is full of slugs large and small. They have ruined the Celery and are in everything. I've had the ground limed and used soot round the Celery. If you can suggest some method of dealing with them I shall be most grateful.

Answer. Slugs are extremely difficult to eradicate where conditions favour them, *i.e.* moist soil rich in organic matter.

Two groups of slugs attack garden plants, namely, the Grey Field Slug (*Agriolimax reticulatus*) and related species, which feed on the aerial parts of plants; and Black Keeled Slugs (*Milax* species), which are subterranean and attack the underground portions of plants.

The best control is obtained by applying poison bait to the infested ground. Mix the bait thoroughly in an old receptacle using 1 oz. of Metaldehyde and 3 lb. of Bran; or against Keeled Slugs, 1 oz. of Metaldehyde and 3 lb. of Bone Meal. Apply the bait evenly and thinly over the ground at nightfall, choosing mild and damp evenings, but avoiding periods of heavy rain. Treated areas should be inspected each morning and all slugs collected and destroyed.

LOSS OF DAFFODIL BULBS DUE TO NARCISSUS EELWORM

10. *Question.* I enclose some bulbs about which I hope you can advise me. I bought one hundred the autumn before last; the first

year they were good and only a few had stunted leaves and blooms, but this spring 80 per cent. have disappeared altogether. The ones I enclose are a few sickly ones left in the bare patches.

Answer. The Narcissus bulbs were attacked by the Bulb and Stem Eelworm (*Ditylenchus dipsaci*).

This microscopic eelworm is a serious pest of Narcissus, causing distortion and malformation of the foliage and flowers; in severe infestations the bulbs become soft and putrid and the plants die.

It is advisable to burn all badly damaged bulbs and to subject the remainder to the warm-water treatment, which consists of immersing bulbs in water maintained at a constant temperature of 110°F. for three hours.

This should be done during the dormant season preferably 4–6 weeks after lifting. Treated bulbs must be replanted in clean soil. *Narcissus*, *Scilla*, Onion or Parsnip should not be grown on the contaminated soil until three years have elapsed.

NOTES FROM FELLOWS

Celsia and Verbascum Hybrids

BOTANISTS divide Celsia from Verbascum by the character of their stamens; whether this division of the two genera is justified is for them to decide, but in any case species of Verbascum and the closely allied Celsia hybridize very freely together and usually produce vigorous offspring.

Celsia arcturus would, however, appear to be an exception, as from this species, crossed with various Verbascum, no fertile seed was obtained. As is the case with Verbascum, if one of the parents used is a perennial, either Celsia, or Verbascum, all the sterile hybrids raised have proved perennial. It should be mentioned here that the attractive dwarf plants obtained from crossing the prostrate little *Celsia acaulis*, from Crete, with *Verbascum phoeniceum*, although perennial, are short-lived, especially during a wet season. These plants flower so continuously as to appear to flower themselves to death.

Celsia roripifolia, a handsome plant from Bulgaria, growing 2–3 feet high, with large pale yellow flowers, and bright green foliage, is a very useful species to hybridize with Verbascum, especially for those that can spare a little space to grow and flower them in a cool greenhouse, furthermore these hybrids continue in flower from spring to late autumn. If the other parents are *Verbascum phoeniceum* in its various colours, then a wide range of very pleasing delicate colours will be obtained.

Celsia cilicica P.D.16525, a dainty slender biennial plant with lemon-coloured flowers, and spoon-shaped leaves, produces hybrids, perhaps more remarkable than beautiful when crossed with *Verbascum phoeniceum*, and these might almost be described as perennial climbers, as in a cool greenhouse, from a flat rosette of leaves, they grow 10 feet high with thin wiry leafless branched stems having dainty flowers spaced at intervals all the way up.

Verbascum Meinckeanum, from the Taurus Mountain area, a biennial with lemon-coloured flowers and a peculiar weeping habit of growth with side branches curving downwards, when crossed with *Verbascum phoeniceum*, produces vigorous perennial plants with large flowers in varied shades of colours. These grow 3–4 feet high and flower over a long period. Here in the Midlands they are more satisfactory in the cool greenhouse.

Large massive flowers up to 6 centimetres in diameter can be obtained by using as one parent *Verbascum bombyciferum* (sold by many nurserymen as Verbascum 'Brusa' and by some seedsmen as Verbascum 'Silver Spire') crossed with other large-flowered biennial forms. Unfortunately the beautiful white dense tomentum which covers the entire plant, is not a dominant feature in the offspring, which are intermediate in this respect when the other parent is glabrous or if only slightly tomentose.

Lastly must be mentioned that attractive dwarf perennial plant from the Taurus Mountains in Asia Minor, *Verbascum Pestalozzae*, with its tiny greyish oval leaves, and golden yellow flowers, which would indeed be difficult to improve upon. However, it hybridizes freely with other Verbascum and may transfer some of its good characteristics to its offspring.

H. C. PUGSLEY

Derby.

Aerva javanica

A note on *Aerva javanica* Juss, a desert plant worthy of introduction as an ornamental plant.

This perennial member of the Amaranthaceae ought to be seen as I saw it for the first time: it was growing in a stony desert wadi, at the foot of an umbrella Acacia and in full bloom. It looked like a snow-covered shrub. The flowers are pure white and as fluffy as freshly fallen snow and the whole plant is covered with a fuzz of silvery hair, soft as down to the touch. The whole plant looks like a shrub covered with hoarfrost.

After collecting seeds we raised seedlings, one of which we planted near our living-hut in Elath* on the shores of the Red Sea. There it received more water than it was apt to get on its natural site. Since then these same plants have grown and multiplied on the spot without our help.

* In the Desert Experimental Garden in Elath, at the Red Sea shore, see JOURNAL R.H.S., **76**, Part 4, March 1952.

Seeds sown in a nursery of the Mediterranean plain also germinated quickly, and I found that they do so in practically every season. It has been sown here in January, March, July and September and always produced quick seedlings and plants.

The time of its first planting in Elath was September 1950; in 1951 it was in full bloom for months and during this period the seeds seem to have taken the chance to establish themselves in the whole area of the garden. Wherever the seeds landed in a crevice, a depression or a watering-basin they started to grow and, although according to human and gardener's nature we like to struggle with plants which resist our efforts to grow them, it cannot be called a disadvantage if they grow easily.

I have as yet not seen this plant in gardens of Europe nor either seen it mentioned in Bailey or horticultural encyclopaedias. I believe though, that it would be an asset to many a garden, especially if cleverly placed with a dark-green or red background of foliage.

Its natural distribution is very wide, running through Burma, India to Western Asia and including East and West Africa and Tunis and Algiers as well as Iraq, Persia and Baluchistan—but this natural distribution does not imply the restriction to this area for cultivation.

I include a picture of the plant in its natural habitat (Fig. 36) which may tempt a garden-lover to introduce it as a summer feature in his rockery or in a sandy bed of not-much-watered perennials. About its winter hardiness in England I cannot pronounce.

ELIZABETH BOYKO

Elath, Israel.

WISLEY TRIALS, 1953

PERENNIAL ASTERS

Seventy-three stocks of Perennial Asters (Michaelmas Daisies) were grown at Wisley in 1953; many of these have received awards in previous years and were grown to compare with the new stocks of which this year there were three. The trial was inspected by a sub-committee of the Floral Committee 'A' on September 14 and 30, 1953, and on their recommendation the Council of The Royal Horticultural Society has made the following awards to Perennial Asters after trial at Wisley.

The number in brackets after the description of the variety was that under which it was grown in the trial.

Novi-Belgi Group

HARRISON'S BLUE. (Raised by Mr. A. H. Harrison, introduced and sent by Messrs. Gayborder Nurseries Ltd., Melbourne, Derbyshire.) **F.C.C.** September 30, 1953.—Described R.H.S. JOURNAL **77**, p. 187. (**A.M.** 1951.) [40]

TWINKLE. (Raised by Mr. A. H. Harrison, introduced and sent by Messrs. Gayborder Nurseries Ltd.) **F.C.C.** September 30, 1953.—Described R.H.S. JOURNAL **77**, p. 187. (**H.C.** 1951, **A.M.** 1952.) [29]

BLANDIE. (Raised and introduced by the late Mr. Ernest Ballard, sent by Messrs. Old Court Nurseries Ltd., Colwall, Malvern, Worcestershire.) **A.M.** September 30, 1953.—Described R.H.S. JOURNAL **78**, p. 69. (**H.C.** 1952.) [32]

CARDINAL. (Raised, and introduced by the late Mr. Ernest Ballard, sent by Messrs. Old Court Nurseries Ltd.) **A.M.** September 30, 1953.—Plant 4–4½ feet tall, compact, erect habit. Flowers 2 inches diameter, semi-double, a bright shade of mauve near Mauve (H.C.C. 633). [52]

FONTAINE. (Raised, introduced and sent by Messrs. Old Court Nurseries Ltd.) **A.M.** September 14, 1953.—Plant 4 feet tall, compact, erect habit. Flowers 2¼ inches diameter, semi-double, Imperial Purple (H.C.C. between 33/1 and 33/2). [24]

ARCHBISHOP. (Raised and introduced by the late Mr. Ernest Ballard, sent by Messrs. Old Court Nurseries Ltd.) **H.C.** September 14, 1953.—Plant 3½–4 feet tall, compact, erect habit. Flowers 2¼–2½ inches diameter, semi-double, a clear violet blue near Aster Violet (H.C.C. 38/1). [41]

MARGARET MURRAY. (Raised, introduced and sent by Mr. G. Murray, Duntreath, Blanefield, Stirlingshire.) **H.C.** September 14, 1953.—Plant 4–4½ feet tall, compact, erect habit. Flowers 2 inches diameter, semi-double, near Cobalt Violet (H.C.C. 634/2). [53]

Acris Group

ACRIS. (Sent by Messrs. B. Ruys Ltd., Royal Moerheim Nurseries, Dedemsvaart, Holland.) **A.M.** Septmber 14, 1953.—Described R.H.S. JOURNAL **46**, p. 377. Colour a clear blue near Aster Violet (H.C.C. 38/2). (**H.C.** 1920.) [72]

EARLY-FLOWERING CHRYSANTHEMUMS

One hundred and thirty-seven stocks of Chrysanthemum were grown at Wisley in 1953. Of these, twenty-four were grown for the first time, having been selected during 1952 for trial at Wisley by the Joint Early-Flowering Chrysanthemum Committee of The Royal Horticultural Society and the National Chrysanthemum Society.

Cuttings were rooted during February and March and the trial was planted out on April 27, 1953. The plants were stopped once and the pompon and spray varieties were allowed to flower naturally and the other varieties were disbudded to allow one flower to develop on each main growth, with eight to ten flowers per plant.

Control of the Chrysanthemum Eelworm (*Aphelenchoides ritzemabosi*) was obtained by the use of a Parathion spray at 0·01 per cent. active ingredient. The spray was applied when the plants were in cold frames during April and again after planting out. The warm water treatment was not used.

The trial was inspected by the Joint Early-Flowering Chrysanthemum Committee on August 7 and 17 and September 1 and 14, 1953, and on their recommendation the Royal Horticultural Society and the National Chrysanthemum Society have made the following awards to Chrysanthemums after trial at Wisley.

The varieties are arranged in the report according to the classification of the National Chrysanthemum Society. The number after the description of the variety was that under which it was grown in the trial.

Section XX—Outdoor Varieties, Incurved

(a) Large Flowered

Pink

JOHN WOOLMAN. (Raised, introduced and sent by Messrs. H. Woolman Ltd., Sandy Hill Nurseries, Olton Road, Shirley, Birmingham.) **A.M.** September 14, 1953, as a disbudded variety for cutting.—Plant 51 inches high, compact, erect, bearing flowering stems 30 inches long. Flowers 5 inches diameter, double, outer florets Persian Rose (H.C.C. 628/3), inner florets Persian Rose (H.C.C. 628/2), reverse silvery white. [55]

Section XXI—Outdoor Varieties, Reflexed

(a) Large Flowered

White

WHITE WINGS. (Raised, introduced and sent by Messrs. J. & T. Johnson, The Nurseries, Tibshelf, Derbyshire.) **A.M.** September 1, 1953, as a disbudded variety for garden decoration.—Plant 42 inches high, compact, bushy, erect, bearing flowering stems 24 inches long. Flowers 7 inches diameter, double, outer florets white, inner florets cream. [34]

Yellow

ECHO. (Raised by Messrs. H. Shoesmith Ltd., introduced and sent by Messrs. Greenyer Bros. Ltd., Broadwater Green Nurseries, Worthing, Sussex.) **A.M.** September 14, 1953, as a disbudded variety for cutting. Plant 48 inches high, compact, erect, bearing flowering stems 30 inches long. Flowers 5⅝ inches diameter, outer and inner florets Canary Yellow (H.C.C. 2). [23]

Bronze

BRONZE ROYAL. (Raised, introduced and sent by Messrs. H. Woolman Ltd.) **A.M.** September 14, 1953, as a disbudded variety for garden decoration.—Plant 36 inches high, compact, bushy, bearing flowering stems 30 inches long. Flower 6¼ inches diameter, double, outer florets rich chestnut bronze, inner florets rich chestnut bronze flushed at base with crimson, reverse yellow bronze. [104]

Purple

PURPLE RAY. (Raised, introduced and sent by Messrs. Napiers Stepswater Nurseries Ltd., Taunton, Somerset.) **A.M.** September 1, 1953, as a disbudded variety for garden decoration.—Plant 48 inches high, compact, erect, bearing flowering stems 30 inches long. Flowers 5½ inches diameter, outer and inner florets a deep rich purple near Paeony Purple (H.C.C. 729), reverse silvery white tinged gold. [67]

Section XXIV—Outdoor Varieties, Pompons

(a) Tall

Pink

LITTLE DORRIT. (Raised, introduced and sent by Messrs. H. Shoesmith Ltd.) **A.M.** August 17, 1953, as a natural grown variety for garden decoration.—Plant 36 inches high, compact, bushy, erect, very free flowering. Flowers 1½ inch diameter, very good substance, Phlox Pink (H.C.C. between 625/2) and 625/3) tinged with bronze and deeper pink. [12]

(b) Dwarf

Yellow

ORANGE LAD. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** August 7, 1953, as a natural grown variety for garden decoration.—Plant 20 inches high, compact, low growing, suitable for bedding purposes. Flowers 2¼ inches diameter, outer florets Aureolin (H.C.C. 3) tinged bronze, inner florets bronze. [9]

Pale Pink

PRIM. (Raised, introduced and sent by Messrs. J. &. T. Johnson.) **A.M.** September 14, 1953, as a natural grown variety for garden decoration.—Plant 23 inches high, compact, low growing, bushy. Flowers 1¼ inch diameter, outer florets very pale pink near Shell Pink (H.C.C. 516/3), inner florets creamy pink tipped reddish bronze, reverse very pale pink. [15]

Pale Pink

PUSSCAT. (Raised by Messrs. H. Shoesmith Ltd., Mayford Nurseries, Moor Lane, Westfield, Woking, Surrey, introduced and sent by Mr. E. G. James, Slefold, Ewhurst, Surrey.) **A.M.** September 14, 1953, as a disbudded variety for garden decoration.—Plant 42 inches high, compact, bushy, bearing flowering stems 24 inches long. Flowers 5¾ inches diameter, outer florets a very pale pink near Shell Pink (H.C.C. 516/3), inner florets Shell Pink (H.C.C. 516/3), the tips of both outer and inner florets touched pale cream. [47]

Pink

SHEILA ROSE. (Raised, introduced and sent by Mr. W. B. Jackson, Brown Heath Nursery, Waverton, Chester.) **A.M.** September 1, 1953, as a disbudded variety for garden decoration.—Plant 48 inches tall, compact, very erect, bearing flowering stems 28 inches long. Flowers 5½ inches diameter, outer and inner florets a light rosy mauve near China Rose (H.C.C. between 024/1 and 024/2), reverse buff. [54]

(b) Medium Flowered

White

BRUMUS. (Raised, introduced and sent by Mr. W. B. Jackson.) **F.C.C.** September 1, 1953, as a disbudded variety for garden decoration.—Described R.H.S. JOURNAL 78, p. 67 (**A.M.** 1952), under name 'Brumas.' [36]

DERBY CREAM. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** August 7, 1953, as a disbudded variety for garden decoration.—Plant 36 inches high, compact, erect, bearing flowering stems 24 inches long. Flowers 5¼ inches diameter, outer florets cream, inner florets Lemon Yellow (H.C.C. 4/1), reverse cream. [42]

Light Bronze

COVENT GARDEN. (Raised, introduced and sent by Messrs. H. Woolman Ltd.) **A.M.** September 1, 1953, as a disbudded variety for garden decoration.—Plant 48 inches high, compact, bushy, bearing flowering stems 26 inches long. Flowers 5¼ inches diameter, outer florets Indian Yellow (H.C.C. 6/1), inner florets slightly deeper Indian Yellow. [103]

Bronze

JANICE SHIPLEY. (Raised by Mr. W. B. Jackson, introduced and sent by Mr. A. C. Shipley, Orchard Nurseries, Bromley, Kent.) **A.M.** August 17,

1953, as a disbudded variety for garden decoration.—Plant 42 inches high, compact, erect, bearing flowering stems 24 inches long. Flowers 6 inches diameter, outer and inner florets Yellow Ochre (H.C.C. 07) overlaid crimson. [112]

Pink

SYLVIA RILEY. (Raised, introduced and sent by Mr. E. Riley, Alfreton Nurseries, Woolley Moor, Derby.) **A.M.** September 1, 1953, as a disbudded variety for garden decoration.—Plant 42 inches high, compact, erect, bearing flowering stems 26 inches long. Flowers 5½ inches diameter, outer and inner florets Rhodamine Pink (H.C.C. between 527/2 and 527/3), reverse creamy white. [64]

Red

RED FLARE. (Raised, introduced and sent by Messrs. J. &. T. Johnson.) **F.C.C.** August 7, 1953, as a disbudded variety for garden decoration.—Described R.H.S. JOURNAL 77, p. 98 (**A.M.** 1951). [122]

RED TIBSHELF IDEAL. (Raised, introduced and sent by Messrs. J. T. Johnson.) **A.M.** August 7, 1953, as a disbudded variety for garden decoration.—Plant 36 inches high, compact, erect, bearing flowering stems 24 inches long. Flowers 5½ inches diameter, outer and inner florets Majolica Yellow (H.C.C. 09/1) overlaid crimson, reverse golden. [81 and 93]

SCARLET PIMPERNEL. (Raised, introduced and sent by Mr. W. B. Jackson.) **A.M.** September 1, 1953, as a natural grown variety for garden decoration.—Plant 42 inches high, compact, erect, bearing flowering stems 30 inches long. Flowers 3 inches diameter, outer and inner florets Mars Orange (H.C.C. 013) with a flush of crimson, reverse golden. [27]

DAHLIAS

One hundred and eighty-eight stocks of Dahlias were grown in the trial at Wisley. Fifty-one of these stocks were grown for the first time, having been selected during 1952 for trial at Wisley by the Joint Dahlia Committee of The Royal Horticultural Society and the National Dahlia Society.

The trial was inspected by the Joint Dahlia Committee on August 14 and September 11, 1953, and on their recommendation The Royal Horticultural Society and the National Dahlia Society have made jointly the following awards to Dahlias as varieties for garden decoration after trial at Wisley. The number in brackets after the description of the variety was that under which it was grown in the trial.

Class VIA. Giant-Flowered Decorative

CROYDON MASTERPIECE. (Raised by Mr. K. Brand, sent by Mr. John Riding, 36 Alderman Hill, Hockley, Essex.) **A.M.** August 14, 1953.—Described R.H.S. JOURNAL 78, p. 64 (**H.C.** 1952). [6]

Class VIC. Medium-Flowered Decorative

TARTAN. (Introduced and sent by Mr. John Riding.) **A.M.** August 14, 1953.—Described R.H.S. JOURNAL 78, p. 65 (**H.C.** 1952). [34]

RUNWICK. (Raised, introduced and sent by Mr. Owen Parratt, Boundstone Nursery, Farnham, Surrey.) **H.C.** August 14, 1953.—Plant 48 inches tall, compact, erect, bearing flower stems 12 inches long. Flowers 6 inches diameter, Dianthus Purple (H.C.C. 730/3), slightly paler towards the centre of the flower. [63]

Class VID. Small-Flowered Decorative

BALLEGO'S MAROON. (Raised, introduced and sent by Messrs. J. G. Ballego & Sons, Bloemhove Nurseries, Leiden, Holland.) **A.M.** August 14, 1953.—Described R.H.S. JOURNAL 77, p. 93 (**H.C.** 1951), under name 'Maroon Gem.' [65]

MARY RICHARDS. (Raised, introduced and sent by Mr. A. E. Drewett, 3 Newnham Avenue, Bedford.) **A.M.** September 11, 1953.—Plant 66 inches tall, compact, erect, bearing flower stems 15 inches long. Flowers 5½ inches diameter, outer florets Roseine Purple (H.C.C. between 629/2 and 629/3), inner florets paler Roseine Purple tinged pale cream. [61]

NEWBY. (Raised and sent by Mr. J. F. Barwise, Towneley Nurseries, Towneley, Burnley, Lancs., and introduced by Messrs. Wm. Westwell & Sons, The Nurseries, Leigh, Lancs.) **H.C.** September 11, 1953.—Plant 48 inches tall, compact, erect, bearing flower stems 14 inches long. Flowers 4 inches diameter, Peach (H.C.C. 512) flushed at tips Shell Pink (H.C.C. 516). [44]

THICKET. (Raised, introduced and sent by Messrs. Brown & Such Ltd., Royal Berkshire Nurseries, Maidenhead, Berks.) **H.C.** September 11, 1953.—Plant 54 inches tall, compact, erect, bearing flower stems 14 inches long. Flowers 5 inches diameter, near Blood Red (H.C.C. 820). [161]

Class VIIC. Small-Flowered Pompon

BUTTON. (Raised, introduced and sent by Mr. W. W. Bunney, The Lodge, Barcombe, Sussex.) **H.C.** September 11, 1953.—Plant 48 inches tall, compact, erect, bearing flower stems 8 inches long. Flowers 1¾ inches diameter, Aureolin (H.C.C. between 3 and 3/1). [166]

Class IXB. Large-Flowered Cactus

JANET BECKETT. (Raised, introduced and sent by Mr. A. C. Wilding, 142 Strathmore Avenue, Luton, Beds.) **A.M.** August 14, 1953.—Plant 48 inches tall, compact, erect, bearing flower stems 18 inches long. Flowers 8½ inches diameter, Primrose Yellow (H.C.C. 601). [79]

MARY CASE. (Raised, introduced and sent by Mr. Owen Parratt.) **A.M.** August 14, 1953.—Plant 54 inches tall, compact, erect, bearing flower stems 18 inches long. Flowers 8½ inches diameter, bright velvety red near Orient Red (H.C.C. 819/1) with centre of flower a slightly deeper red. [97]

TILFORD. (Raised, introduced and sent by Mr. Owen Parratt.) **H.C.** August 14, 1953.—Plant 54 inches tall, compact, erect, bearing flower stems 18 inches long. Flowers 8½ inches diameter, Chinese Coral (H.C.C. 614/3) flushed Phlox Pink (H.C.C. 625/2), base of florets golden yellow.

Class IXC. Medium-Flowered Cactus

BACCHUS (MAARSE). (Raised, introduced and sent by Messrs. K. Maarse Dz. Jr., Uiterweg 32, Aalsmeer, Holland.) **H.C.** September 11, 1953.—Plant 48 inches high, compact, erect, bearing flower stems 20 inches long. Flowers 7 inches diameter, outer florets a velvety shade of Orient Red (H.C.C. 819), inner florets slightly darker red than outer. [152]

Class IXD. Small-Flowered Cactus

DEERPLAY. (Raised and sent by Mr. J. F. Barwise, introduced by Messrs. Wm. Westwell & Sons.) **H.C.** August 14, 1953.—Plant 54 inches tall, compact, very erect, bearing flower stems 18 inches long. Flowers 5½ inches diameter, a very clear bright shade of yellow near Dresden Yellow (H.C.C. 64/1). [131]

DORIS DAY. (Raised, introduced and sent by Messrs. C. & S. Weijers & Sons, Leidschestraat 100, Hillegom, Holland.) **H.C.** August 14, 1953.—Plant 48 inches tall, compact, erect, bearing flower stems 18 inches long. Flowers 5½ inches diameter, outer florets a velvety shade of Blood Red (H.C.C. 820), inner florets slightly deeper red than outer. [145]

HOCKLEY NYMPH. (Raised, introduced and sent by Messrs. J. F. Spencer & Son Ltd., Hockley, Essex.) **H.C.** September 11, 1953.—Plant 54 inches tall, compact, erect, bearing flower stems 16 inches long. Flowers 4½ inches diameter, outer florets cream, inner florets cream flushed Dresden Yellow (H.C.C. 64/2). [70]

PINK POSY. (Raised, introduced and sent by Mr. A. T. Barnes, Kingsbrook Gardens, Cardington Road, Bedford.) **H.C.** September 11, 1953.—Plant 5 feet tall, fairly compact, erect, bearing flower stems 14 inches long. Flowers 5¼ inches diameter, outer florets Tyrian Rose (H.C.C. 24/2), inner florets Tyrian Rose (H.C.C. 24/2) changing at base of floret to yellow. [156]

PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1953

Ailanthus altissima, A.M. September 22, 1953. A deciduous tree up to 60 feet in height, commonly called 'Tree of Heaven.' It has pinnate leaves 2 feet or more in length, composed of about 25 lance-ovate, dark green leaflets. The small, greenish-white flowers are borne in large terminal panicles, and are followed by light reddish-brown winged fruits, each about 1½ inch long. Exhibited by Mrs. Raymond Warren, Handcross, Sussex.

Arundinaria fastuosa, A.M. May 19, 1953. This stiff and erect-growing Bamboo, which attains a height of 20 feet or more, is the tallest of the really hardy species. The leaves are from 4 to 8 inches long, about an inch wide, dark shining green on the upper surface, one-half glaucous beneath. Exhibited by C. J. Howlett, Esq., The Yews, Earley, Reading.

Buddleia × Pikei 'Hever' A.M. September 8, 1953. A very attractive hybrid raised from the cross *B. alternifolia* × *B. caryopteridifolia*. Mr. A. V. Pike, who made the cross, states that the hybrid is hardy and has been overwintered successfully on a cold clay soil. By pruning in early April he has obtained flowers as late as October. The paniculate inflorescence, up to a foot in length, is made up of a series of dense-flowered axillary clusters. In colour the flowers are Mauve (H.C.C. 633/2) darkening towards the edges of the petals. The leaves are oblanceolate, 4 inches long, an inch across, dark olive green above and silvery beneath. Exhibited by Col. the Hon. J. J. Astor, Hever Castle, Edenbridge, Kent.

Caryopteris clandonensis 'Ferndown' A.M. September 22, 1953. Seedlings raised from *Caryopteris* × *clandonensis* exhibit a good deal of variation in leaf-shape and flower-colour. The one exhibited, which was raised by the exhibitors, has conspicuously lobed lanceolate

leaves and plentiful flowers of Veronica Violet (H.C.C. 639) with somewhat darker buds. Like its parent it is an admirable late-flowering shrub for a sheltered and sunny place. Exhibited by Messrs. D. Stewart & Son, Ferndown, Dorset.

Colchicum speciosum 'Huxley' A.M. September 22, 1953. This is one of the largest and best of the seedlings of *Colchicum speciosum* raised by the late Mr. R. O. Backhouse. The flowers are of fine form and substance, in colour Mauve (H.C.C. 633) shaded with Petunia Purple (H.C.C. 31/1). Exhibited by W. O. Backhouse, Esq., Sutton Court, Hereford.

Cotoneaster hybrida pendula A.M. September 22, 1953. This is believed to have originated in this country from a cross between *C. frigida* and *C. Dammeri*, and it is a striking evergreen with lustrous leaves on long pendulous branches which in autumn are wreathed with ample bunches of bright red berries. Exhibited by Messrs. Barnham Nurseries, Ltd., Barnham, Sussex.

Crataegus submollis A.M. September 22, 1953. This handsome species from the Eastern U.S.A. forms a tree 20 or 30 feet tall with broadly ovate, lobed and toothed leaves about 3 inches long, and branchlets armed with sharply pointed spines of a similar length. The large white Hawthorn-like flowers are followed by broadly pear-shaped orange-red fruits $\frac{3}{4}$ inch long in clusters of eight to ten. Exhibited by Messrs. T. Hilling & Co., Chobham, Woking.

Eucalyptus Dalrympleana A.M. September 22, 1953. One of the more hardy species, introduced from Tasmania in 1942, which has flourished in the open air in Cheshire since that date without protection. In the adult tree the grey-green pendulous leaves are ovate-lanceolate, 4 to 6, or as much as 10, inches long and 2 inches wide. The peeling trunk of the tree has a silvery colouration. Exhibited by Messrs. C. H. Taudevin, Raby Nurseries, Willaston, Cheshire.

Fuchsia arborescens A.M. October 6, 1953. This shrubby species, introduced from Mexico in 1824, is only suitable for the cool greenhouse in this country, where it makes a large bush with sturdy glabrous stems bearing whorls of three oblanceolate, acuminate, light green leaves up to 8 inches long. The individual flowers, which have pale China Rose (H.C.C. 024/3) sepals and light Lilac petals, are not much over $\frac{1}{2}$ inch across, but the complete panicle, nearly a foot long and wide, is very effective. The bloomy, Plum-purple fruits, $\frac{1}{2}$ inch long, are freely produced. Exhibited by R. Olaf Hambro, Esq., Logan House, Stranraer.

Hydrangea macrophylla 'Ami Pasquier' A.M. July 28, 1953. A very attractive variety with compact heads of sterile flowers each $1\frac{1}{2}$ inch across made up of five nearly orbicular sepals. When freshly opened the colour of the flower is China Rose (H.C.C. 024), passing with age to Erythrite Red (H.C.C. 0027). Exhibited by Mr. M. Haworth-Booth, Farall Nurseries, Haslemere.

Hydrangea paniculata floribunda A.M. July 28, 1953. This is

a Japanese garden variety of a well-known species. It has stiff erect stems bearing coarsely serrate ovate-elliptic leaves 5 inches long and large pyramidal terminal panicles. These are made up of a large number of small axillary heads each composed of creamy-white fertile flowers surrounded by from six to ten sterile blooms ½ inch across. Exhibited by Mr. M. Haworth-Booth, Farall Nurseries, Haslemere.

Kniphofia Galpinii F.C.C. October 6, 1953. This very valuable late-flowering species, which received the **A.M.** in 1930, was first collected in 1891 at an altitude of 4,500 feet in the Transvaal. It is an admirable herbaceous plant for a sunny border, where it produces tufts of grassy leaves up to 2 feet tall and numerous slender scapes exceeding the foliage and bearing dense terminal spikes of narrow, flame-coloured, pendent flowers each an inch long. Exhibited by Messrs. Thos. Carlile (Loddon Nurseries) Ltd., Carlile's Corner, Twyford, Berks.

Lonicera etrusca superba A.M. July 28, 1953. A vigorous form of a half-evergreen climbing Mediterranean Honeysuckle. It sends up long shoots which produce near their tips many purple-tinged lateral branchlets bearing pairs of pale green glaucous leaves and panicles of large creamy-white flowers passing with age to butter yellow. Exhibited by the Commissioners of Crown Lands, Windsor Great Park, Berks.

BOOK NOTE

"Mushrooms and Toadstools." By J. Ramsbottom. (Collins, London. New Naturalist, No. 7, 1953, price 30s.) xiv + 306 pp. 84 coloured and 58 monochrome plates.

This long-awaited contribution by Dr. Ramsbottom to the New Naturalist series is a worthy successor to previous volumes. In keeping with the scope of these works, it is not a handbook for the identification of species, but is a mine of information about fungi in general, as indicated by the subsidiary title—"A Study of the Activities of Fungi." Compressed into a single volume is up-to-date information as to the growth, physiology, sex-phenomena and spore-production of these organisms, with special chapters on such favourite subjects as Fairy Rings, Mycorrhiza, Dry Rot, Edible and Poisonous Fungi, and the cultivation of Mushrooms. Intermingled with all this there is a wealth of curious information derived from the old books in which the author delights to delve. The illustrations from photographs, both coloured and black and white are on the whole excellent, and together with much information and descriptive matter in the text should serve to introduce beginners to many of our more striking fungi. It would have been better, however, if some indication of magnification had been given, since the scale varies very much. The book is completed by a chapter on Penicillin, and a combined index and glossary.

E. M. WAKEFIELD

ORDERS FOR BOOKS

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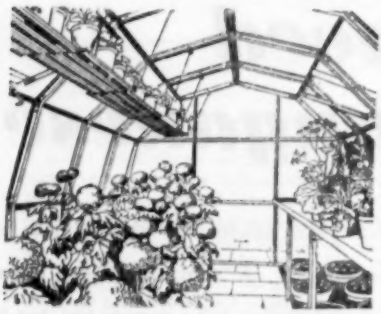

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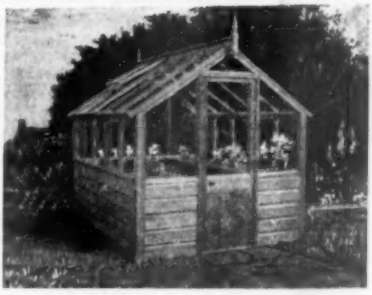

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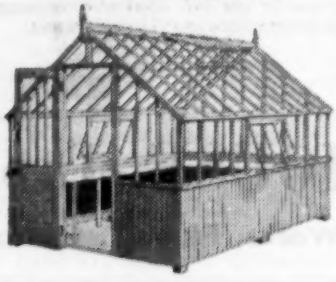

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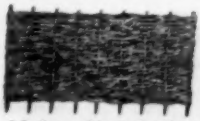

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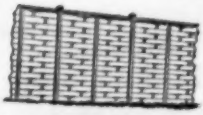

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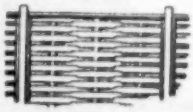

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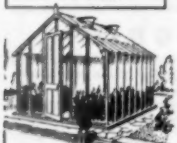

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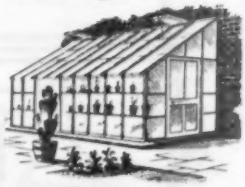

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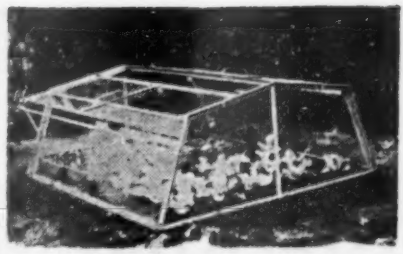

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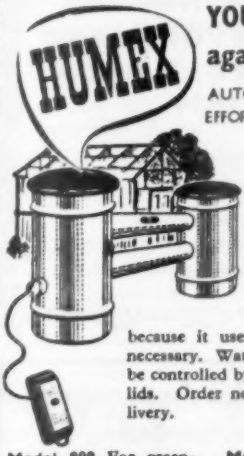

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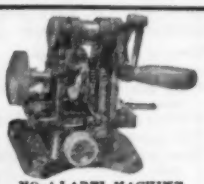

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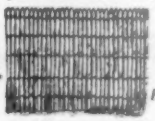

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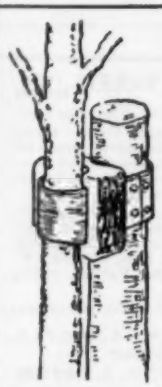

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3 lbs. 8/6; 7 lbs. 17/-; 14 lbs. 26/-; 1 cwt. 177/6

All orders of 15 lbs. and upwards charged at 1/7½ per lb. equal to cwt. rate.

HART BEST QUALITY MIXTURE

without Ryegrass, containing Fescues and Dogstail, at :—

3 lbs. 21/-; 7 lbs. 40/-; 14 lbs. 73/-; 28 lbs. 139/-; 56 lbs. 268/-; 1 cwt. 510/-

Seeds treated against birds—no extra.

Above prices carriage paid, bags free. Cash with order.

Prices can be submitted for mixtures suitable for shady areas and any other purpose for which special grasses are required. Agricultural seeds also supplied.

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